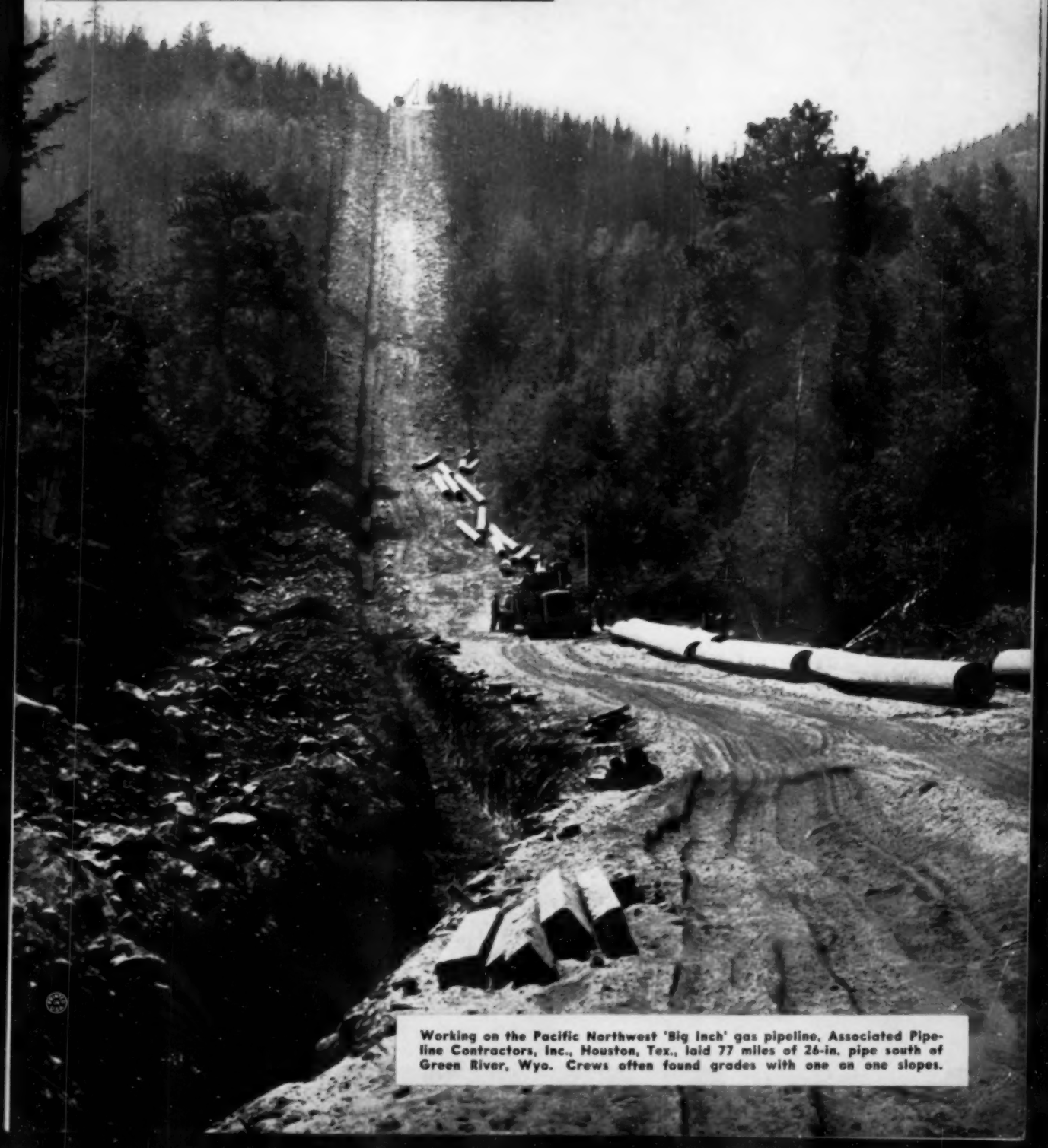
Excavating Engineer

founded 1905

MARCH
1956



Working on the Pacific Northwest 'Big Inch' gas pipeline, Associated Pipeline Contractors, Inc., Houston, Tex., laid 77 miles of 26-in. pipe south of Green River, Wyo. Crews often found grades with one on one slopes.

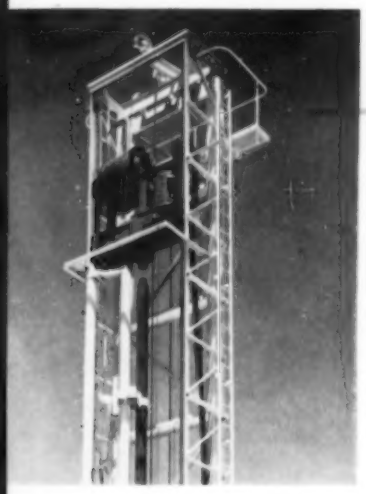
40-R and 50-R

BUCYRUS ERIE

Rotary Blast Hole Drills

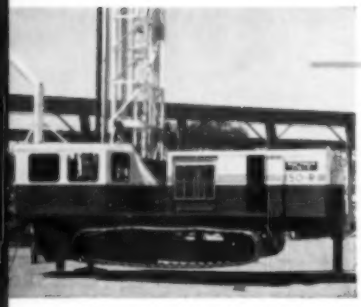
PROVIDE ALL-ROUND SPEED ON LARGE-SCALE PROJECTS

Mines, quarries, and big construction jobs profit from the high-speed, large-diameter hole making ability of Bucyrus-Erie rotary blast hole drills. In shallow or deep holes, you get speed every minute.



Speedy Tool Handling

To make up a tool joint, a remote-controlled tool storage rack swings your selection of drill pipe into place above the hole and centers it under the rotary drive machinery. The rotary machinery is lowered to meet the drill pipe; then rotary coupling and pin joint on the drill pipe are screwed together under power. Make-up is counted in seconds. Dismantling is equally fast.



Move-Up Speed

Travel over rough ground and through mud is fast because of the tractor-like mobility of the crawler mounting. Excellent stability permits most moves to be made with the derrick up. Set-ups are simply a matter of leveling the machine again. Hydraulic jacks quickly correct machine tilt.

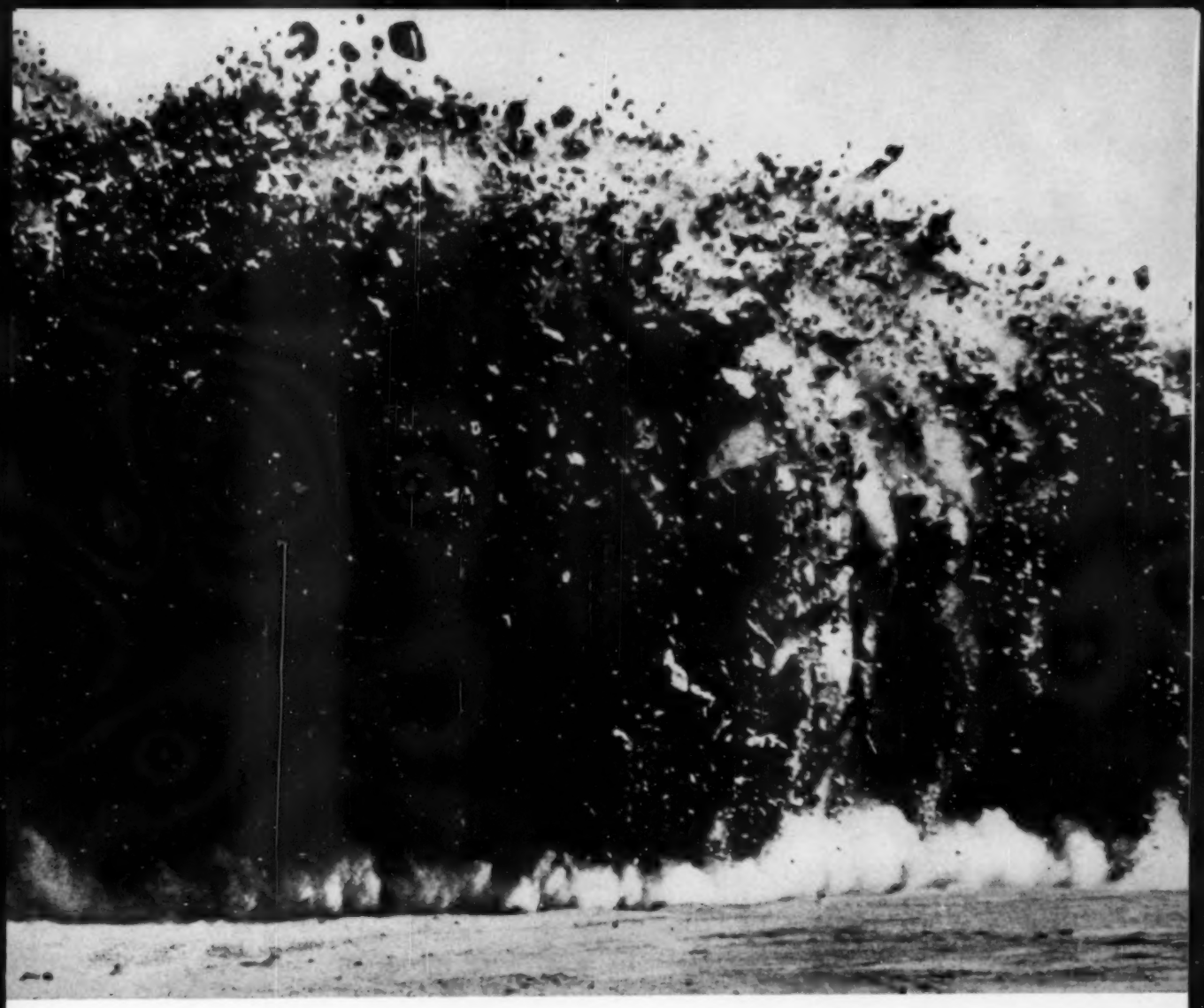
Drilling Speed

The entire length of each drill pipe section can be drilled down in one non-stop run. Both rotary drive and pulldown force are applied at the top of the drill pipe and follow it all the way down. That means fast hole on your job. Hole progress is continuous, too, because rotation speed can be changed instantly as needed through Ward Leonard electric control, and down pressure can be varied through hydraulic control. Instant speed and pressure adaptation mean faster hole on your job. All controls — electric, hydraulic, and air — are conveniently grouped on one central panel.

30855C

There are two Bucyrus-Erie rotary drill models. The 40-R drills 6¼ to 9-in. holes and offers a choice of diesel-electric or full electric power. Model 50-R drills 9⅞ to 12¼-in. holes and is electrically powered. For detailed, illustrated bulletins, write today to —

BUCYRUS-ERIE COMPANY South Milwaukee Wisconsin



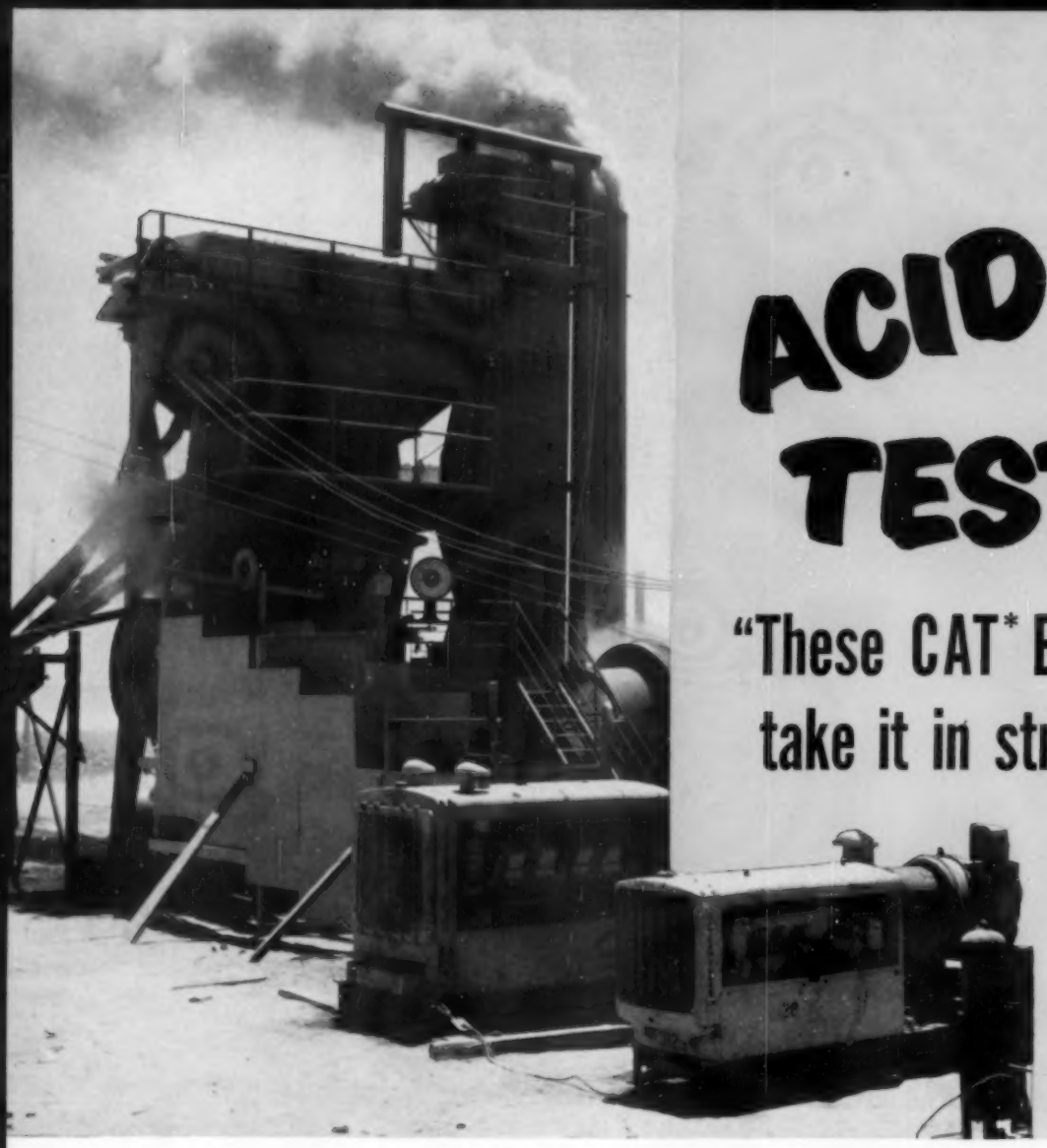
EXPLOSIVES RESEARCH IN ACTION

This photograph of a blast of 27,000 pounds of Hercules® explosives in a traprock quarry is conclusive proof of how proper explosives technique pays off. The initial breakage was excellent, providing a sloping bank of broken rock for easy shovel digging and uninterrupted crushing and screening operations in the plant.

Achieving satisfactory results from primary blasts requires the selection and use of the right explosives materials and methods. For more than 40 years, Hercules has pioneered in the development of improved explosives techniques for quarrying, mining, seismic prospecting, and construction. A Hercules representative will welcome the opportunity to assist in solving your blasting problems.

HERCULES POWDER COMPANY
INCORPORATED
Explosives Department, 972 King St., Wilmington 99, Del.
Birmingham, Ala.; Chicago, Ill.; Duluth, Minn.; Hazleton, Pa.; Joplin, Mo.; Los Angeles, Calif.; New York, N. Y.; Pittsburgh, Pa.; Salt Lake City, Utah; San Francisco, Calif.

XR56-6



ACID TEST!

"These CAT* Engines take it in stride"

"If you want to give an engine the acid test," says Frank Muren, superintendent of this road job in the Mojave Desert, "put it in a hot plant like ours. There's heat and plenty of dust, but these Cat Engines take it in stride."

There are three Caterpillar D17000 Engines in this hot plant at Edwards Air Force Base, Calif., with more than 14,000 hours among them—and *no repairs*. One of them is shown here powering the dryer, together with a Cat D318 supplying auxiliary power. The contractors, Fredericksen and Kasler of Sacramento, Calif., have seven Caterpillar Engines on the job with a total of about 25,000 hours.

Cat Diesels owe their trouble-free work lives to such features as "Hi-Electro" hardened crankshaft journals, long-lasting aluminum alloy bearings, and highly *effective* filters and seals that keep lubricants *in* and harmful grit *out*.

It's *economical* work life, too. Every Cat Diesel is built to operate cleanly and efficiently even on low-cost fuels, such as No. 2 furnace oil. The rugged simplicity of these efficient power units means easy maintenance, minimum down time, low repair bills.

There's a Caterpillar Engine or Electric Set for *your* job requirements, to 520 HP and 315 KW. Your Caterpillar Dealer will gladly help you select the equipment that will do more work for you at lower cost. See him soon—you can count on him whenever you need fast, reliable service or original Cat parts.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

MODERN HEAVY-DUTY POWER

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Excavating Engineer

founded 1905

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In addition, specific fuel consumption on a horsepower per hour basis will be far less. Sea level performance will be restored within operating limits at altitude, response to acceleration demands will be rapid and excessive smoking under operating power eliminated. Also, the noise level will be greatly reduced.

Application in other fields will be equally effective, as has already been demonstrated in the remarkable results achieved by the installation of AiResearch Turbochargers on Caterpillar diesel machinery.

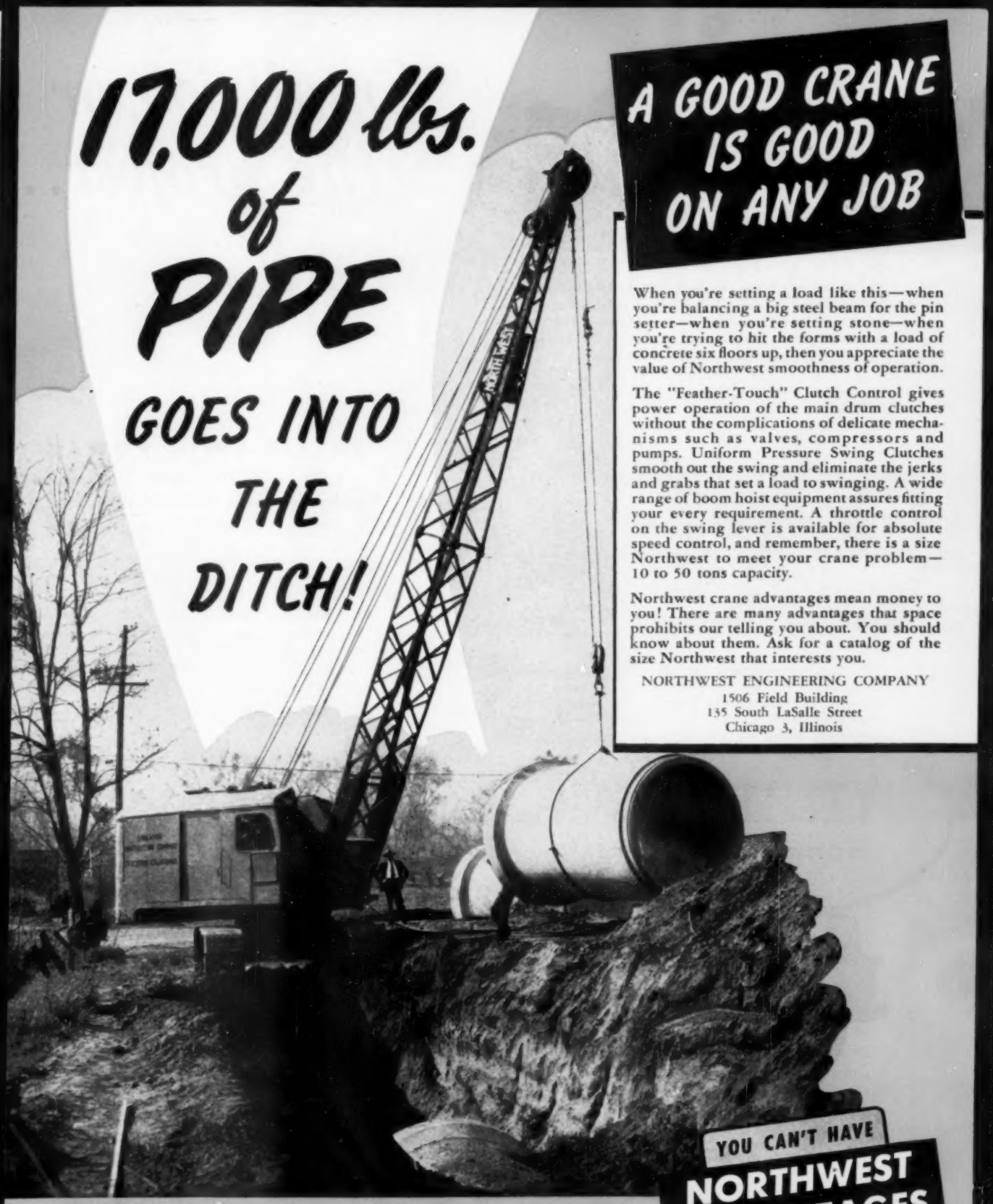
AiResearch is the largest producer of small turbomachinery in the United States, with twenty-five *million* hours of experience. This unmatched experience explains why AiResearch Turbochargers lead in power, economy and dependability.
Your inquiries are invited.

THE GARRETT CORPORATION

AiResearch Industrial Division

9225 Aviation Blvd., Los Angeles 45, California

DESIGNERS AND MANUFACTURERS OF TURBOCHARGERS AND RELATED MACHINERY



17,000 lbs. of PIPE GOES INTO THE DITCH!

A GOOD CRANE IS GOOD ON ANY JOB

When you're setting a load like this—when you're balancing a big steel beam for the pin setter—when you're setting stone—when you're trying to hit the forms with a load of concrete six floors up, then you appreciate the value of Northwest smoothness of operation.

The "Feather-Touch" Clutch Control gives power operation of the main drum clutches without the complications of delicate mechanisms such as valves, compressors and pumps. Uniform Pressure Swing Clutches smooth out the swing and eliminate the jerks and grabs that set a load to swinging. A wide range of boom hoist equipment assures fitting your every requirement. A throttle control on the swing lever is available for absolute speed control, and remember, there is a size Northwest to meet your crane problem—10 to 50 tons capacity.

Northwest crane advantages mean money to you! There are many advantages that space prohibits our telling you about. You should know about them. Ask for a catalog of the size Northwest that interests you.

NORTHWEST ENGINEERING COMPANY
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Chicago 3, Illinois

YOU CAN'T HAVE
NORTHWEST ADVANTAGES
UNLESS YOU OWN A NORTHWEST

NORTHWEST

SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

Small job or Big project..

On this Florida Turnpike contract of Blythe Bros., two TS-18 "Eucs" loaded, hauled and dumped in sandy conditions that "hung up" other equipment. The tremendous power and traction of this Euclid scraper made it a logical choice for this tough job.

Western Contracting Corp. used 12 of these TS-18 Euclid Scrapers on a 7 million yard Indiana Turnpike job. Because of the extremely difficult sandy conditions, the tractors were equipped with 300 h.p. engines. Top extensions added 6½ yds. to the bowl capacity.

EUCLID TWIN POWER
in the TS-18 provides more work-ability than you get in any other scraper

Twin-Power—the use of two engines driving separate axles—was pioneered in the earth moving field by Euclid 10 years ago. Torque converters and semi-automatic transmissions assure easy operation and a smooth flow of power matched to all job conditions. One of Euclid's newest scraper models, the TS-18 uses power and drive components that have proved their dependable performance in other "Eucs" on hundreds of jobs.

The TS-18 is powered by two 218 h.p. engines—one in the tractor and another behind the scraper bowl. For work where even more power can be used, a 300 h.p. engine for the tractor is available. Both engines drive through separate Torqmatic Drives. Standard tires are 27.00 x 33 with 33.50x33 available as optional equipment.

Lever action and hydraulic control of bowl, apron and ejector make the TS-18 easy to operate. At the Glasgow Air Base in Montana, Harris Construction Co. used 4 of these Twin-Power Scrapers for grading and construction of runways.

EUCLID DIVISION
GENERAL MOTORS CORPORATION
Cleveland 17, Ohio

this TS-18 "Euc" *cuts earth moving costs!*

VERSATILITY
for a wide range of work!

This TS-18 is the most recent development of the Twin-Power principle pioneered by Euclid and job proved in earlier scraper models. Its unequalled power and traction gets more work done... sets a new standard for low cost scraper yardage. Self-loading in practically any material from loose sand to hard shale, the TS-18 is a one-man earthmoving spread. It works on steep grades and under job conditions that stymie other scraper equipment.

Hydraulic lever action does away with cable headaches and expense. All scraper operations—bowl, apron and ejector—are independently controlled. All four of the hydraulic jacks are interchangeable... one spare fits anywhere. The low, wide bowl design and reversible four-section cutting blade make the TS-18 easy to load ... heaped loads up to 24 yds. are picked up fast.

Like all other Euclid Scrapers, the TS-18 is built to stay on the job with less down-time for servicing and repair. All major components are readily accessible... a feature that really pays off in more work-ability and lower maintenance cost. Your Euclid dealer has facts and figures showing why owners everywhere say that ***Euclids are your best investment.***

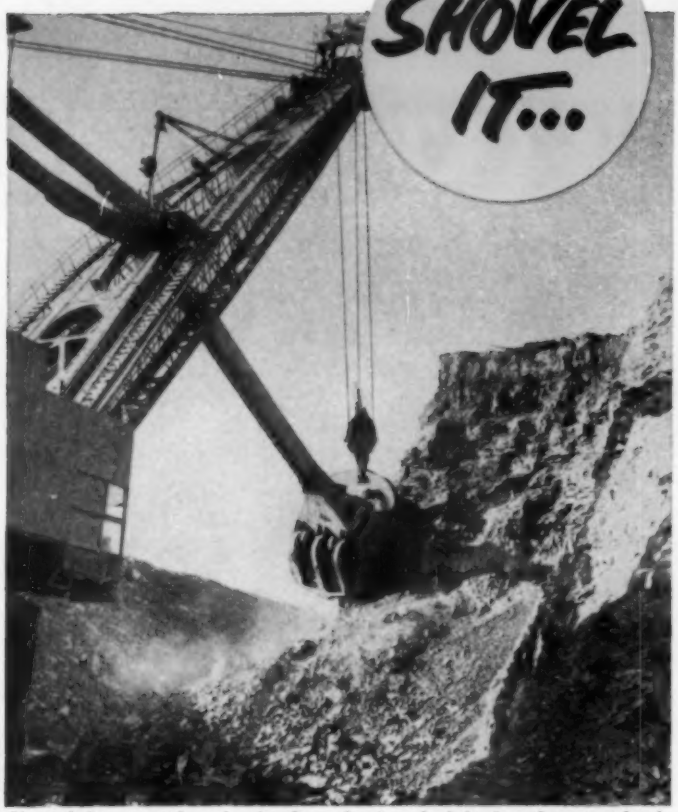
EUCLID

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

GM GENERAL MOTORS

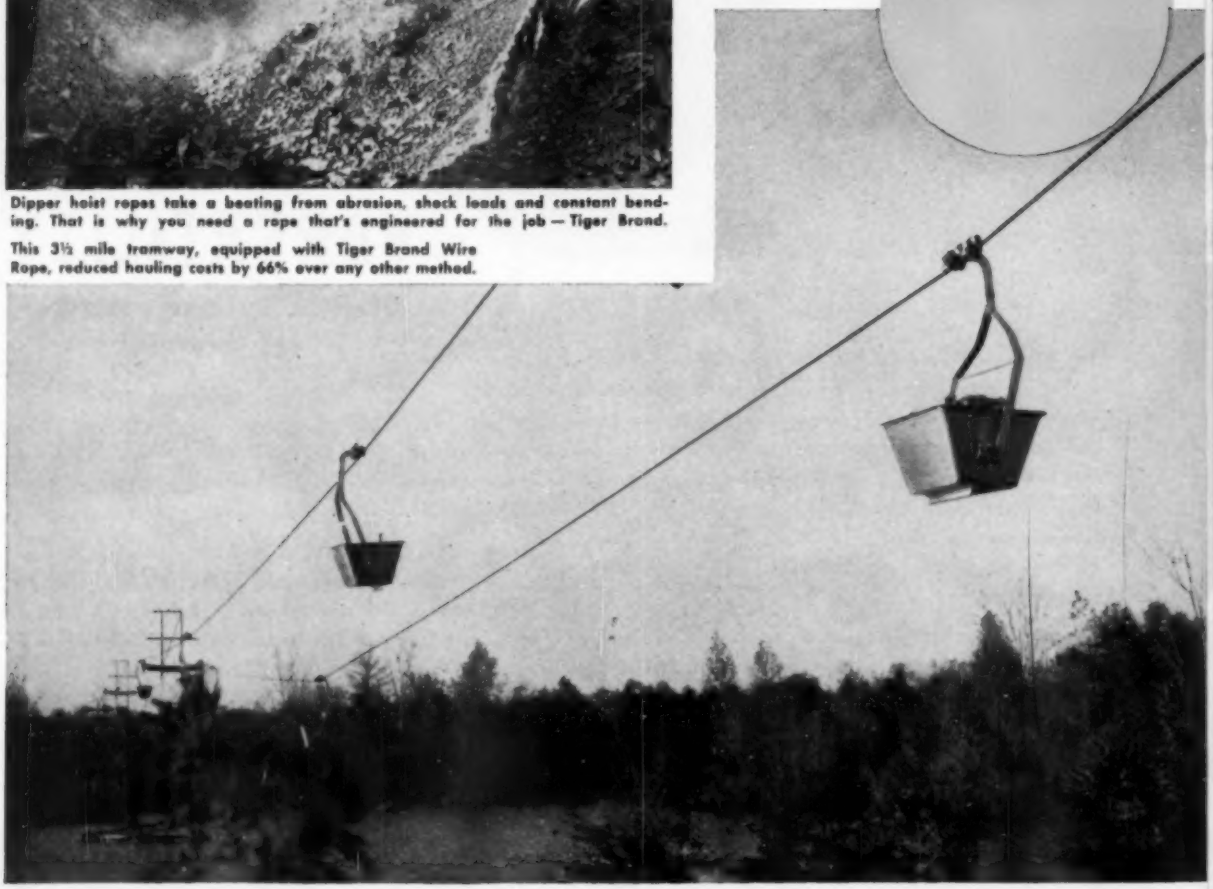
WHETHER YOU SHOVEL IT...



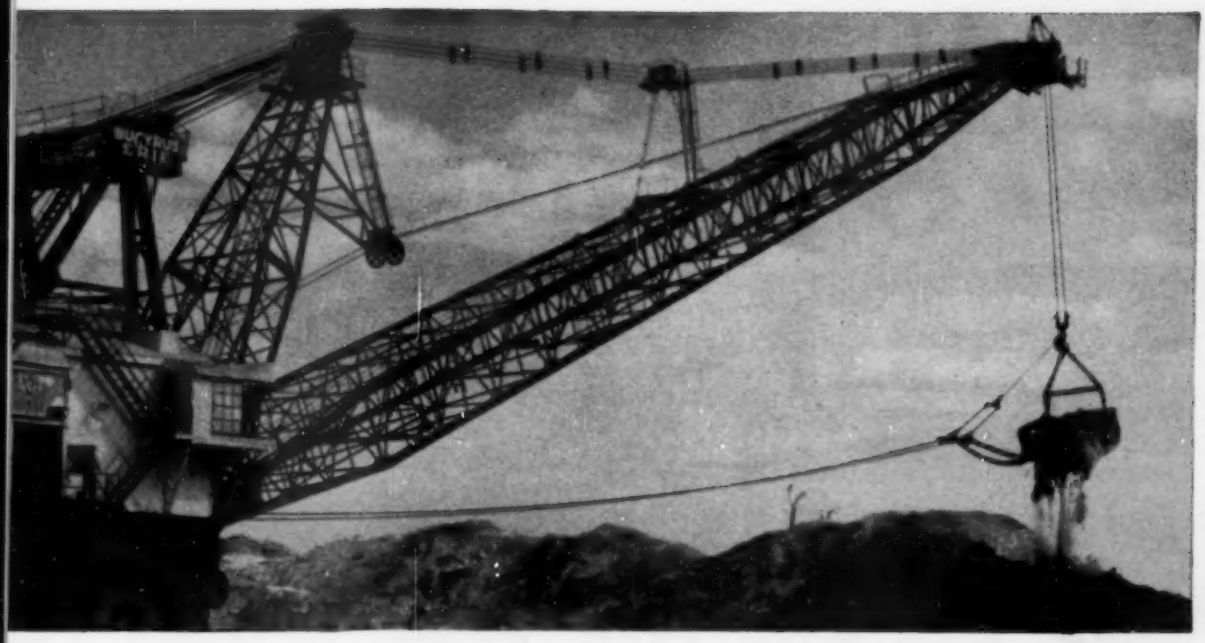
Dipper hoist ropes take a beating from abrasion, shock loads and constant bending. That is why you need a rope that's engineered for the job — Tiger Brand.

DRAG IT...

OR HAUL IT



This 3½ mile tramway, equipped with Tiger Brand Wire Rope, reduced hauling costs by 66% over any other method.



Tiger Brand Drag Lines have a reputation for keeping costs down by moving more cubic yards per rope.

BY AIR... Tiger Brand delivers top yardage per dollar spent for wire rope

When you are moving materials in a big way, the cost per cubic yard may be a deciding factor in the type of equipment and wire rope you select. Whether you use shovels, draglines or tramways, the problem is to pick the rope that will give the best possible service on your job.

On shovels, Tiger Brand Wire Rope has run up some amazing records. Tiger Brand shovel hoist ropes are designed to combine flexibility, strength and resistance to abrasive wear as required by this class of service.

On draglines, where a lot of abrasive wear and abuse are encountered, Tiger Brand drag ropes have demonstrated time and again that the right rope for the job is the most economical.

For tramways, Tiger Brand track cables and traction ropes are recognized leaders.

For a personal guide to rope selection, send the coupon.

American Steel & Wire Division
Rockefeller Building, Dept. E-36
Cleveland 13, Ohio

Please send me your Wire Rope Recommendation Book, "The Right Rope for the Job."

Name .....
Company .....
Address .....
City ..... State.....

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UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS AMERICAN TIGER BRAND WIRE ROPE

Excellay Preformed

USS

UNITED STATES STEEL

FROM ALL OVER THE WORLD . . .

PROVE HENDRIX BUCKETS BEST

The large percentage of "repeat orders" for Hendrix Dragline Buckets is real evidence of satisfaction. Their outstanding performance and reputation for delivering more production at lower costs makes them the first choice of progressive operators.

A TYPE FOR EVERY DIGGING PURPOSE

¼ to 40 Cubic Yards

All Hendrix Buckets available without perforations

HENDRIX MANUFACTURING CO., Inc.
MANSFIELD, LOUISIANA

Hendrix Lightweight Dragline Buckets

The most important date for the Construction Industry in 1957

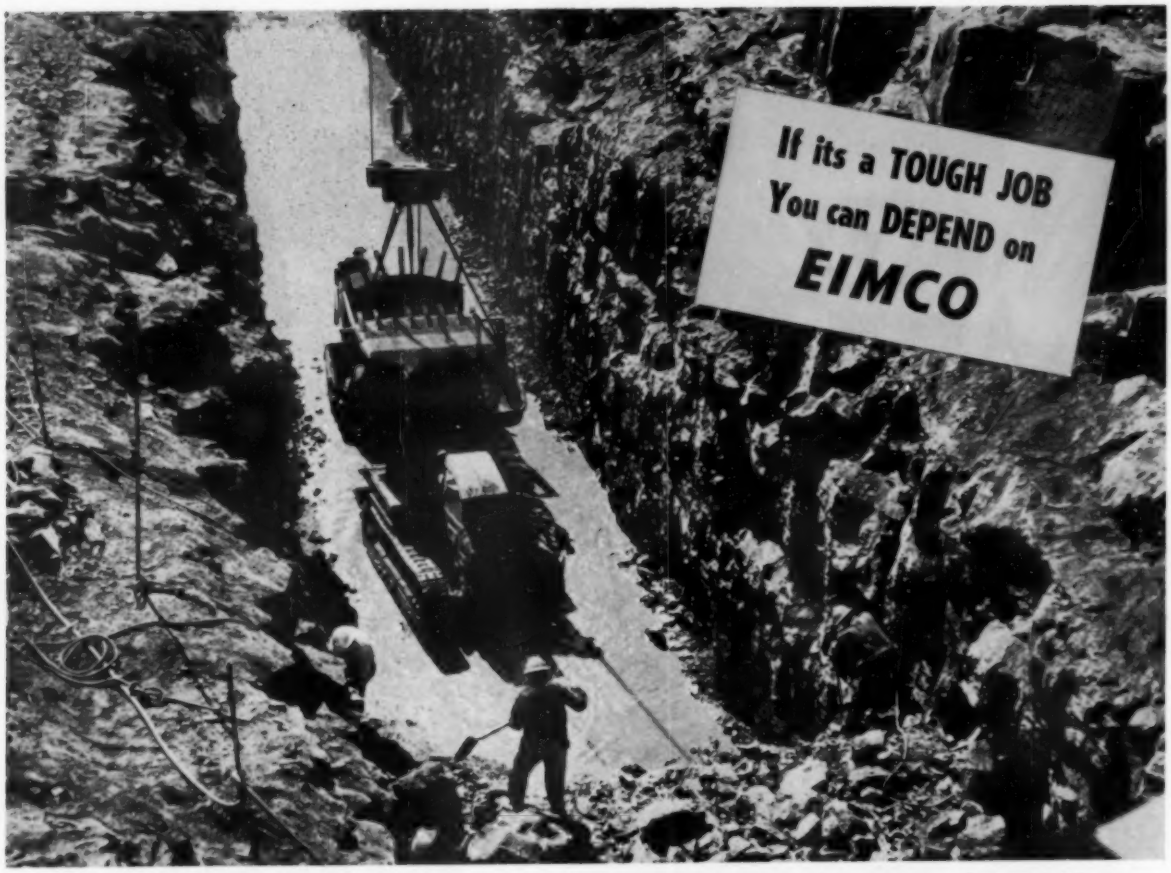
A.R.B.A.
ROAD SHOW and CONVENTION
PLAN NOW!

1957 will bring with it the first Road Show in almost 10 years! Tremendous advancements have been made in this last decade. New equipment has been developed. New methods have superseded old. New cost-cutting ideas have come forward. Here is the time and place to bring yourself up to date on all the new developments.

Nothing is being spared to make this 1957 Road Show the greatest indoor exhibit of machinery and materials ever gathered together. At the same time, the A.R.B.A. convention will give you an opportunity to learn about new methods and practices and hear outstanding authorities discuss the solution of problems that are bothering you.

Put it down as the most important date for the construction industry in 1957. Write for data on reservations. Ask to be put on the list to receive future information on the 1957 A.R.B.A. Road Show and Convention.

AMERICAN ROAD BUILDERS' ASSOCIATION
World Center Building
Washington 6, D.C.



EIMCO KEEPS TOUGH EXCAVATION JOB ON SCHEDULE

Contractor — Montag - Halvorson - Cascade-Austin.

Location — The Dalles, Oregon.

Project — The Dalles Dam — Excavation of South Fishway.

Rock — lava basalt 91,000 cubic yards.

Report — Eimco's 105 Tractor Excavator was purchased for this job after several other types of equipment had been tried and proved either entirely unsatisfactory or incapable of maintaining the desired pace. The fishway (shown above) was excavated in lava basalt (typical of this section) with its characteristic flows and faults. Blasting in the faulted zone left many large blocky pieces of rock.

The method successfully used to excavate the shot rock from the 1500 foot long by 15 foot wide fishway channel which was 16′ deep at one end and 60′ deep at the other is as follows: A 6 yard rock ship was lowered by a crane and held in place by a Koehring Dumptor. It was loaded by the Eimco and hoisted out. "This method proved to be the most satisfactory and economical. Both machines took a terrific beating to get this job done, but to this day no one has been able to suggest a better way of doing it."

When it comes to bidding on a tough job — here are a few factors to consider: (1) Cubic yards of tough rock loaded per hour given proper haulage equipment — the Eimco will handle on a comparable basis with boom type shovels 1½ to 2 times its bucket size. (2) Cost—compare the prices. (3) Maintenance — compare these costs on jobs similar to your own. (4) Versatility — The Eimco moves quickly, easily. (5) Labor — compare the productivity per man hour.

Yes! You too will find Eimco's best for the tough jobs.

THE EIMCO CORPORATION

Salt Lake City, Utah—U.S.A. • Export Offices: Eimco Bldg., 52 South St., New York City

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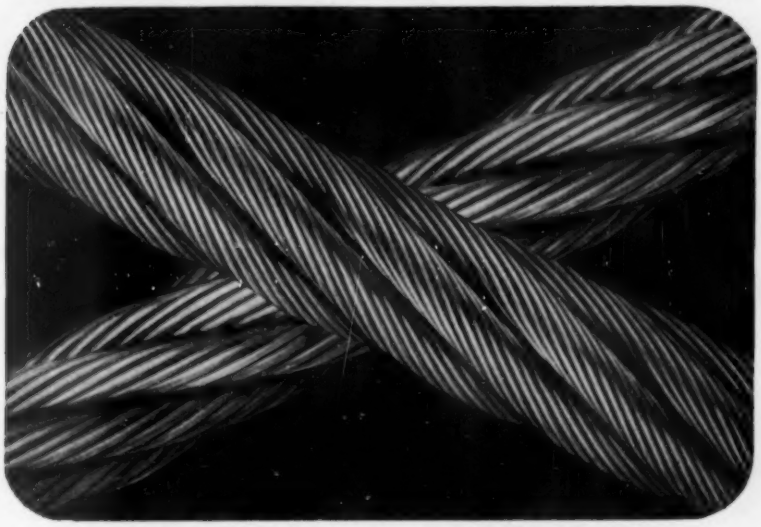
EIMCO

B-178

FIRST WE DEVELOPED 1105 ROPE WIRE.



THEN WE MADE ROEBLING'S

Royal Blue

WIRE 1105 ROPE

1105 takes Royal Blue out of the ordinary wire rope class.

1105 is a rope wire that's new—that's stronger. It's the biggest news in many years.

1105 is the result of more than a century of research and development—it's the wire that gives Roebling Royal Blue the stamina that pays off in service.

Contact your Roebling distributor or write us for the full story.

ROEBLING

Subsidiary of The Colorado Fuel and Iron Corporation

CF&I

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Heaping load on the bulldozer is easily handled by the Turbocharged D9. Notice all-around visibility from operator's seat—also easy access to controls.

D9 SETS PRODUCTION PACE CROSSING ON SECTION 33, MASSACHUSETTS

A bid of $4,719,719 on Section 33, Massachusetts Turnpike, won the contract for J. F. White Contr. Co., Cambridge, and Consolidated Constr. Co., Attleboro, Mass. Among other work, specifications on this 3.89-mile section called for excavating 1,720,000 cu. yd. of earth, 46,100 of rock and 231,800 of peat, as well as handling 507,800 cu. yd. of borrow and 205,000 of gravel.

In the equipment line-up, there was a fleet of Caterpillar units including a D9, four D8s, two No. 90s, one D6, four DW21s, a No. 12, a No. 212, a D337 and two D13000s in draglines. Here you see the Turbocharged CAT* D9 Tractor with No. 9S Bulldozer pushing fill into a peat bog.

On this well-planned operation, seven scrapers hauled the fill to the D9. Making round trips of about 4500 feet, the wheel-type DW21-No. 21 Scrapers averaged 15.4 pay yards a trip. On shorter hauls, the crawler-drawn No. 90s averaged 22 pay yards a trip. During its 10-hour day, the D9 set such a fast pace for the scrapers that only occasionally was it necessary to have another 'dozer lend a hand with the fill.

For jobs that call for top production, you can't beat the dirt-moving capacity of the giant D9. For complete facts about the new king of the crawlers, see your nearby Caterpillar Dealer!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

THE D9—NEW KING OF THE CRAWLERS

PEAT BOG TURNPIKE

BIG PRODUCTION FEATURES OF THE D9

First Track-Type Tractor with Turbocharger

The D9's Turbocharger is driven by engine exhaust, utilizing energy which would otherwise be lost. It packs air into the engine according to engine load, *not engine speed, for* more *working horsepower.*

Choice of Torque Converter or Direct Drive

To match the tractor to your job, two types of drive are available: the exclusive Caterpillar Oil Clutch with six-speed transmission (both in forward and reverse) or a three-stage torque converter with three gear ranges.

Completely New 286 HP Engine

The powerful D9 Engine features, in addition to the Turbocharger, a 6¼" bore and 8" stroke and runs at 1200 RPM.

Constant Power Drive for Rear-Mounted Equipment

Power for cable controls, direct from the engine's rear power take-off, makes operation completely independent of flywheel clutch or torque converter, boosts operating efficiency.

Easy to Operate

Hydraulic boosters provide power for steering and braking and master clutch operation. The 7-roller track frame provides excellent stability, flotation and ride. The starting engine has an electric starting system and simple single-lever control for easy and convenient operation from the seat. Fast, sure starts in any weather.

Easy to Service

Oil clutch, torque converter, transmission and steering clutches can each *be removed individually without disturbing other components. Hydraulic track adjusters are among the many other features for fast, easy adjustment.*

Almost singlehanded, the D9 handles all the fill brought up by seven scrapers on Section 33, Massachusetts Turnpike, near Framingham.

Back of the D9, a dragline powered by a Cat D337 Engine scoops peat from bog.

Again in '55...

MACK

1st* IN DIESEL TRUCK SALES

and by the biggest margin ever!

*based on official A.M.A. factory sales figures. Nearest make attained 17.16% of the market.

42.06% of all diesel trucks sold in 1955 were *MACKS!*

Operators everywhere, in all kinds of hauling operations, have again made Mack their No. 1 favorite among *all* diesel trucks. And their margin of preference is the biggest so far! Regardless of competitive claims, Mack owners have learned from millions of miles of heavy-duty operation how truly outstanding are Mack trucks powered by the famous Mack Thermodyne Diesel engine. They're *first* in earning power . . . because they're *first* in fuel economy, *first* in low-cost maintenance, and *first* in rugged long life. See your Mack branch or distributor for the full story. Mack Trucks, Empire State Building, New York 1, New York.

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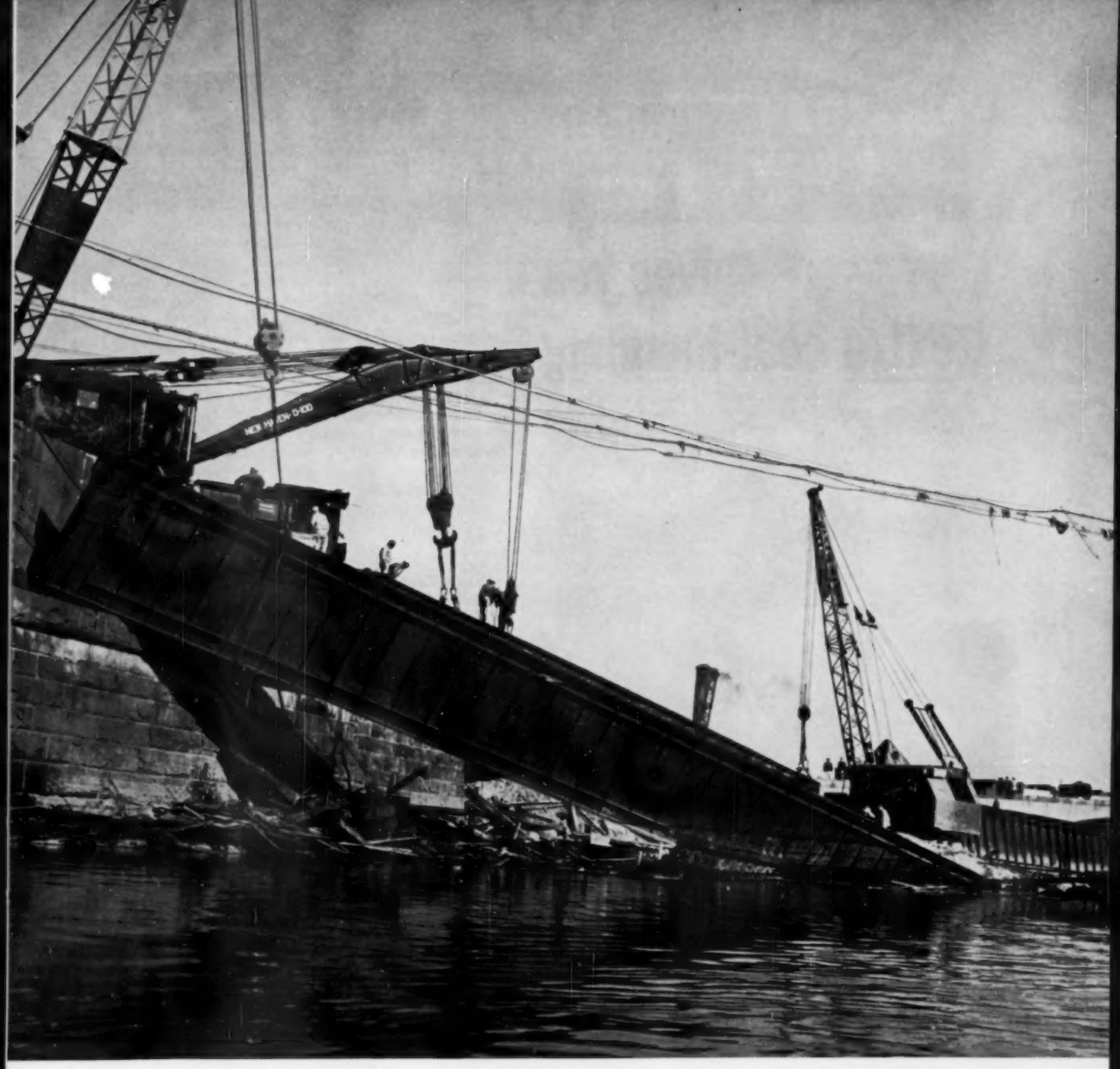


Wire Rope at Work—When Hurricane Diane loosed one of the most destructive floods in history, scenes like this were common. The angry torrents swept parts of Pennsylvania, New Jersey, New York, and New England, taking a staggering toll of lives and property. Bridges like the one above, in western Connecticut, were playthings of the raging waters.

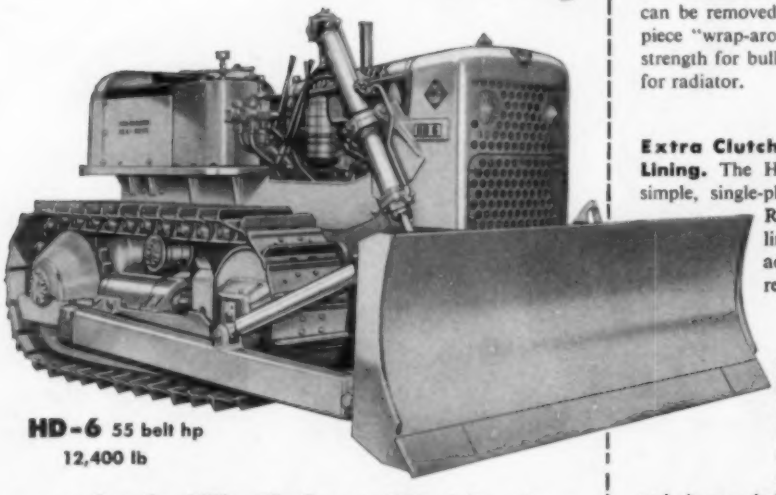
Prior to the disaster, this bridge spanned the Naugatuck River. To salvage what was left after the flood, the Foundation Company was summoned from New York, and its hard-working crews and equipment were soon on the job. An emergency shipment of Bethlehem wire rope, ordered by telephone, was rushed to the site of operations; hustled into service. It had the muscle for the tremendous lifts involved, and in no time at all, the work of moving the wreckage was underway.

Bethlehem Steel Company, Bethlehem, Pa. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation *Export Distributor:* Bethlehem Steel Export Corporation

Mill depots and distributors from coast to coast stock Bethlehem rope for the following industries and numerous others:

CONSTRUCTION • EXCAVATING • MINING • QUARRYING • PETROLEUM • LOGGING • MANUFACTURING

This kind of Crawler Tractor Design gives you extra coal-handling ability



HD-6 55 belt hp
12,400 lb

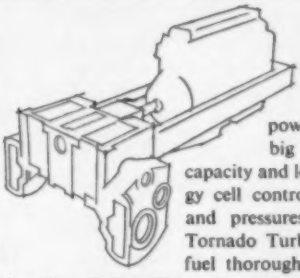
. . . and only Allis-Chalmers HD-6 has it—

advanced design features that combine big performance, versatility, dependability and simplified servicing!

Look at the Allis-Chalmers HD-6—you can see its functional design . . . how it's built to give sure-footed traction, better working balance. But there's more to this crawler tractor than meets the eye—the performance advantages of Allis-Chalmers advanced basic design. It provides more working power, more strength in all components, more working weight where it's needed . . . makes the HD-6 an outstanding performer with drawn or mounted equipment . . . easier to operate and maintain.

Let your Allis-Chalmers dealer show you how the HD-6 can give you that *extra* output on your jobs.

ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION
MILWAUKEE 1, WISCONSIN

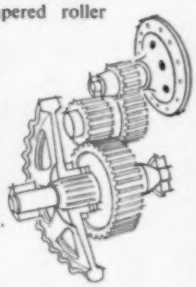


Allis-Chalmers Heavy-Duty Diesel Engine. The HD-6 power plant is designed for big output, ample reserve capacity and low maintenance. Energy cell controls combustion timing and pressures for high efficiency. Tornado Turbulence mixes air and fuel thoroughly for more complete burning. Follow-Through combustion sustains effective working pressures to take advantage of better crankshaft leverage.

Special Strength and Protection. Exclusive all-steel box-A main frame makes possible superior over-all balance, better equipment mounting . . . plus service simplicity of unit construction. Major assemblies like engine and clutch can be removed without disturbing adjacent parts. One-piece "wrap-around" radiator guard provides maximum strength for bulldozer mounting . . . complete protection for radiator.

Extra Clutch Life—with Ceramic Lining. The HD-6 master clutch offers simple, single-plate, over-center design. Revolutionary new ceramic button clutch lining keeps clutch operating longer between adjustments . . . lengthens clutch life . . . reduces lever pull for easier operation.

Straddle-Mounted Final Drive Gears. Tapered roller bearings support both ends of the final drive gear shafts. Smaller gears and shorter shafts (plus line-bored, one-piece case), provide better bearing and gear alignment, more strength, longer life. Double-reduction final drives provide greater ground clearance.



New-Design, Heavy-Duty Track. HD-6 track provides long life under the toughest conditions. HD-6 sidebars have more steel where it's needed . . . benefit from new heat-treating methods which make possible new standards of strength and hardness throughout for extra wearability.

Other Outstanding HD-6 Features

. . . no other tractor in this size class has them—at no extra cost you get roller bearing truck wheels, idlers and support rollers; 1,000-hour lubrication intervals for truck wheels, idlers and support rollers; 24-volt direct electric starting; crankcase guard; bumper; and lights.

ALLIS-CHALMERS

NEW SAUERMAN SLACKLINE CABLEWAY INCREASES PRODUCTION OVER 25%

Bucket breaks water with heaping load from a 100 ft. depth...

Wherever deep digging is required and operating spans are long, the new Sauerman Slackline is adding to its margin of superiority over other types of excavators. Production increases of over 25% and in some unusual cases as high as 80% are reported.

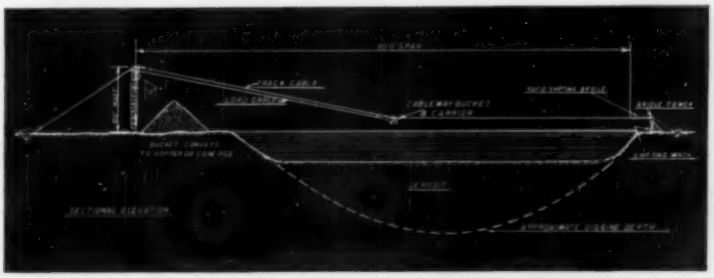
Not only is production increased but operating costs are lowered as cable and hoist wear is reduced and the machine runs with fewer peak loads and shocks—all possible from a cushioned drive using a torque convertor and other refinements.

These benefits are also available to present owners of slackline cableways. Guaranteed Gravel & Sand Co., a Sauerman Slackline user for over 35 years, has increased hoist speeds from 230 to 350 fpm. on the digging cycle and conveying speed to 800 fpm.—a gain of 25%. Guaranteed's 2-cu. yd. bucket is digging 450 ft. away from the surge pile and delivers 150 cu. yds. per hr.

The Sauerman Method lets you work distant material—up to 1,000 ft. away and dig 100 ft. or more below water. Now more than ever the greater tonnage available through fluid drive operation makes a Sauerman Slackline Cableway the low cost way for deep digging.

Get the best machine for your job. Write to Sauerman for expert advice on any materials handling project. For additional information on slackline cableways, ask for Catalog C.

is conveyed and dumped automatically at surge pile.



Above drawing was prepared for a specific slackline installation and does not represent maximum spans. Rapid shifting bridle is not needed for many deposits.

Guaranteed Gravel and Sand Co.'s slackline bucket dumps 150 cu. yds. per hr. on surge pile from digging point 450 ft. away.

SAUERMAN BROS. INC. 622 SOUTH 28TH AVENUE • BELLWOOD, ILLINOIS

CRESCENT SCRAPERS • SLACKLINE and TAUTLINE CABLEWAYS • DUROLITE BLOCKS

Close Quarters? Get a

When close-quarter digging gets you in a corner, you can depend on a Bucyrus-Erie Hydrocrane to get you out — and at a profit.

This compact, all-hydraulic truck crane with extremely short tail swing squeezes into narrow passageways, edges close to obstructions and moves out the dirt. You can handle trenching, basement excavation, close-quarter digging or remodeling work — dozens of jobs where ordinary equipment just can't maneuver properly.

And the telescoping boom gives you an extra close-quarter advantage. By extending or retracting boom, the operator can place the bucket in exactly the right spot for digging and dumping — without moving the crane an inch!

Bucyrus-Erie Hydrocranes are now available in two fast-working, fast-traveling sizes — 3/8-yd., 4-ton model H-3 and 1/2-yd., 9-ton model H-5. Your Bucyrus-Erie distributor will be happy to demonstrate on your job.

121H56C

New Rehandling Bucket

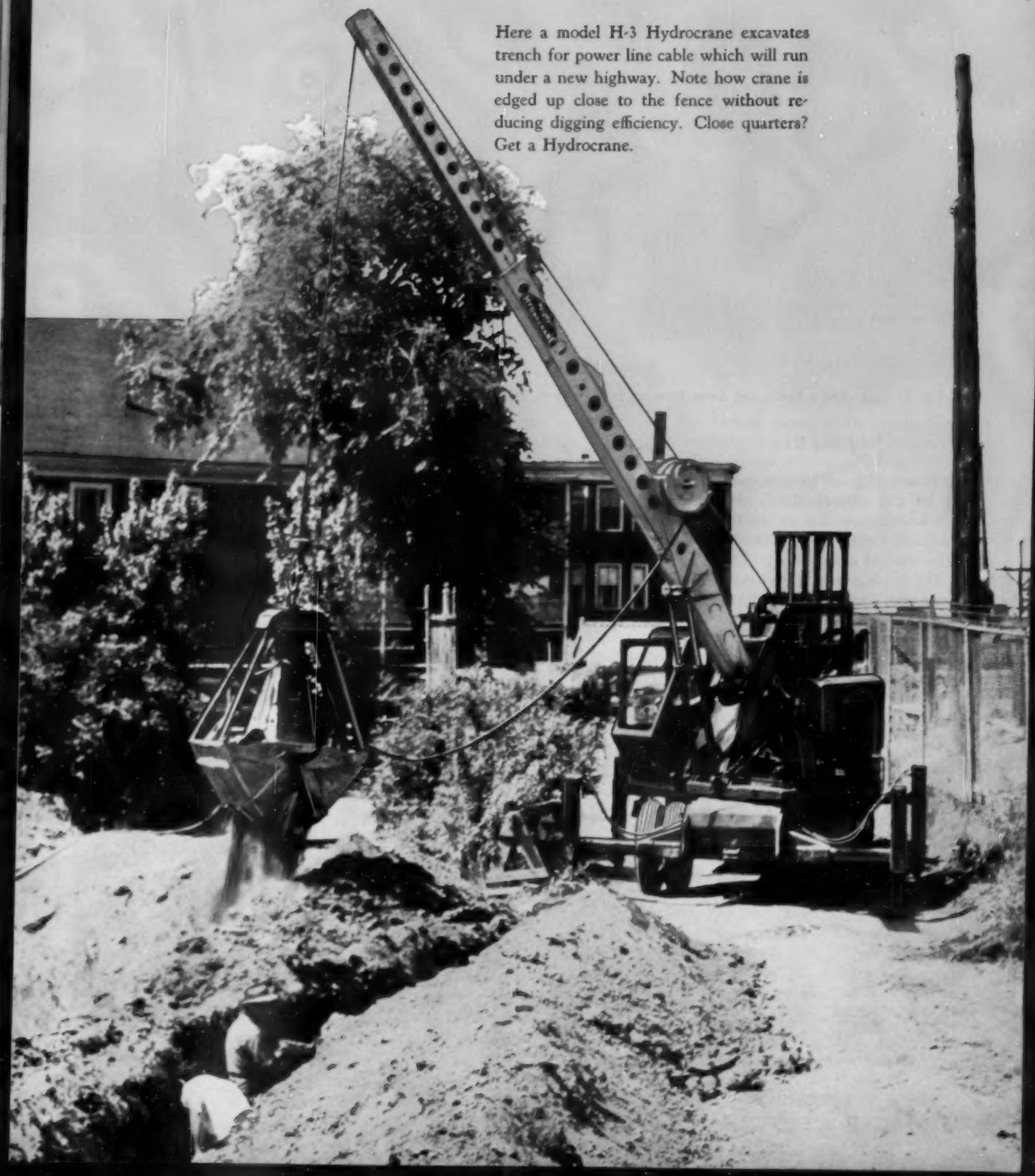
. . . for H-5 machine now available. This low head-room type, 3/4-yd. bucket opens and closes hydraulically through two double-acting rams. Bowls are interchangeable with standard 1/2-yd. digging bucket. Two buckets for little more than the cost of one!

BUCYRUS-ERIE COMPANY

South Milwaukee, Wisconsin

BUCYRUS ERIE HYDROCRANE BUCYRUS ERIE HYDROHOE

HYDROCRANE!



Here a model H-3 Hydrocrane excavates trench for power line cable which will run under a new highway. Note how crane is edged up close to the fence without reducing digging efficiency. Close quarters? Get a Hydrocrane.

Excavating Engineer
founded 1905 MARCH, 1956

A Cat D8 dozer and a Euclid end dump team up to lay a 4-ft. lift of impervious material for the earthfill structure of the dam.

California's Newest Dam

Steady excavation and hauling make for speedy construction as Winston Bros. Co., Monrovia, Calif., builds newest flood control dam to tame another unruly stream in southern California.

by Ray Day

IN mountainous foothills just north of Claremont, Calif., the latest flood control link in the Corps of Engineers program for southern California is nearing completion.

San Antonio Dam is the name of this latest unit. Construction on the $3,400,000 earthfill barrier was pushed steadily through 1955 by Winston Bros. Co. of Monrovia, Calif., a general contracting firm. Steady excavation and hauling production, which balanced off at an average of about 20,000 cubic yards per day, is credited for getting the job out on schedule.

San Antonio Dam's construction represents one of the most efficient excavation and hauling jobs done in southern California during the 1955 work season. Speed of construction was necessary because of the importance of San Antonio Dam in the Santa Ana River basin. The new reservoir, together with San Antonio and Chino creeks channel, is a flood control improvement for the protection of lands and buildings along San Antonio and Chino creeks. Much needed protection will be furnished to an important urban area.

The channel of San Antonio Creek

Benched-out, steep haul roads like this were typical in the early stages when scrapers dug out the spillway site. Equipment included six Model 14-SH Euclid scrapers.

runs along the highest part of a fan-shaped debris cone which comes out at the dam site at the base of the foothills. During floods this channel could move to any part of the cone on either side of its existing course. That happened in the immediate past several times. The type of damage it caused, however, will be prevented in the future.

Frequent Floods

Devastating floods occurred in 1916, 1921, 1934, 1938, 1941 and 1943. The big flood of 1938, for example, caused damage totaling $1,687,000 and caused six people to lose their lives in the headwaters of San Antonio Creek. If that flood were repeated today, several times the damage of 1938 could be expected because the overflow area now is considerably more developed. The dam has been designed to prevent exactly that type of disaster.

The area to be protected includes valuable residential, commercial and industrial properties within the cities of Pomona, Claremont, Chino, Ontario and Upland, and also extensive, highly improved agricultural properties. Value of improvements in the overflow area is estimated to be at least $150 million.

Protection from floods also will be provided to the principal east-west railroads and highways serving the Los Angeles area and its harbor. The Southern Pacific and Union Pacific railroads cross the overflow area just east of Pomona. The Santa Fe Railway crosses it east of the city of Claremont. The Pacific Electric Railway, a local carrier of large quantities of reloaded transcontinental freight, also crosses the overflow area east of Claremont.

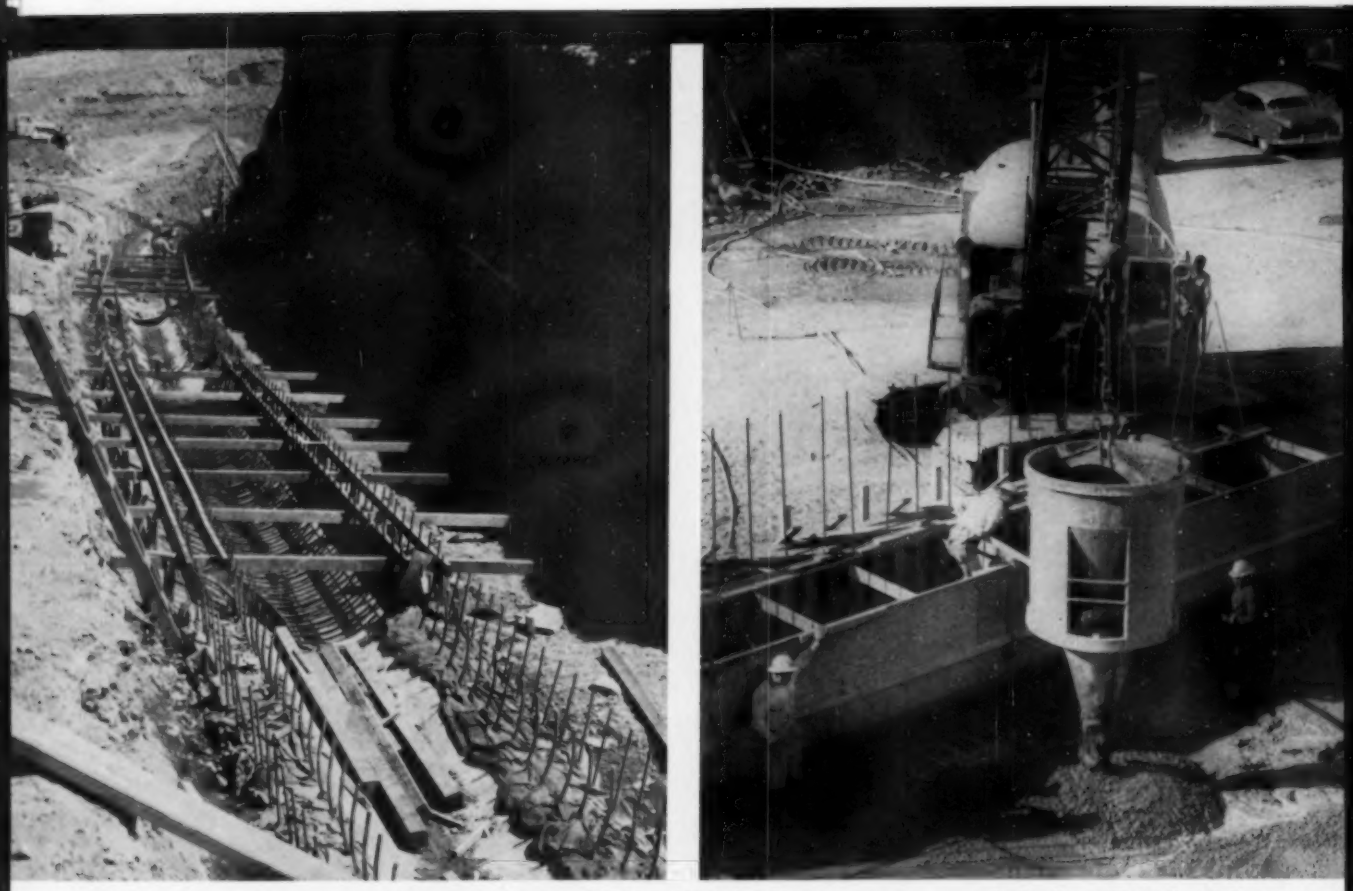
The four lines move more than 4,000 freight cars and 435 passenger cars daily. This represents more than half of all the rail traffic entering and leaving the Los Angeles area. About 57,000 acres of highly developed land will be protected by the project.

Principal tamping unit on this section of the fill which required compaction is a Cat-driven Southwest rubber-tired roller. Cat dozers and a grader level the material.

The Corps of Engineers has continued the construction program for several years by letting separate contracts for various stages of the work. Construction of the intake structure and the outlet conduit was started in April 1952 and completed in 1953. Winston Bros. Company's contract was to complete the outlet works, the spillway, the dam embankment and control gates.

Other important work in connection

A 2½-yd. dragline cuts a utility trench leading up one face of the dam. The 3,850-ft. long dam rises 160 feet above streambed.



(Left) A flume will carry away drainage water from hillsides. (Right) A Lima crane pours concrete for the spillway foundation.

with the project included construction of about 1.5 miles of county road relocation in Los Angeles and San Bernardino counties. Also necessary was the relocation of 1.6 miles of power lines and a half mile of telephone lines directly within the reservoir area. Other important relocation work included irrigation and domestic water facilities belonging to San Antonio Water Co., the City of Upland Water Dept., the Canyon Water Co., the North Palomares Irrigation Co. and the Pomona Valley Protective Assn.

Dam Handles Runoff

The dam, which will control runoff waters from a 26.7 square mile drainage area, was designed as an earthfill structure. It is 3,850 feet long at its crest and rises 160 feet above streambed at its point of maximum height. The elevation of the finished dam crest is 2,260 feet above mean sea level.

There are three principal zones in the dam. An impervious clay zone is designed to hold back the penetration of water from the reservoir. The clay came from the spillway cut area nearby. This impervious zone is 80 feet wide at its base, 12 feet wide at its crest and has ¾ to 1 side slopes. It was placed with a moisture content of about 19%—three percentage points above its optimum for best compaction.

The second zone, a transition between zones 1 and 3, is a cross between impervious and pervious material. This material, located on both sides of the impervious core, consists of a 12-ft. thick blanket erected on the same slope as Zone 1. In placement, the moisture in this zone was not controlled.

Zone 3, in which moisture also was not controlled during construction, consists of river-run cobbles and boulders

A Marion electric shovel equipped with a 6-yd. Esco dipper loads a Euc with embankment material from a borrow pit. Highly compacted material made digging difficult.

up to three feet in size. Because of the large size of the boulders, this material was placed by end-dumping in 4-ft. lifts. If unusually good material was found in the Zone 3 excavations, it was placed in Zone 2.

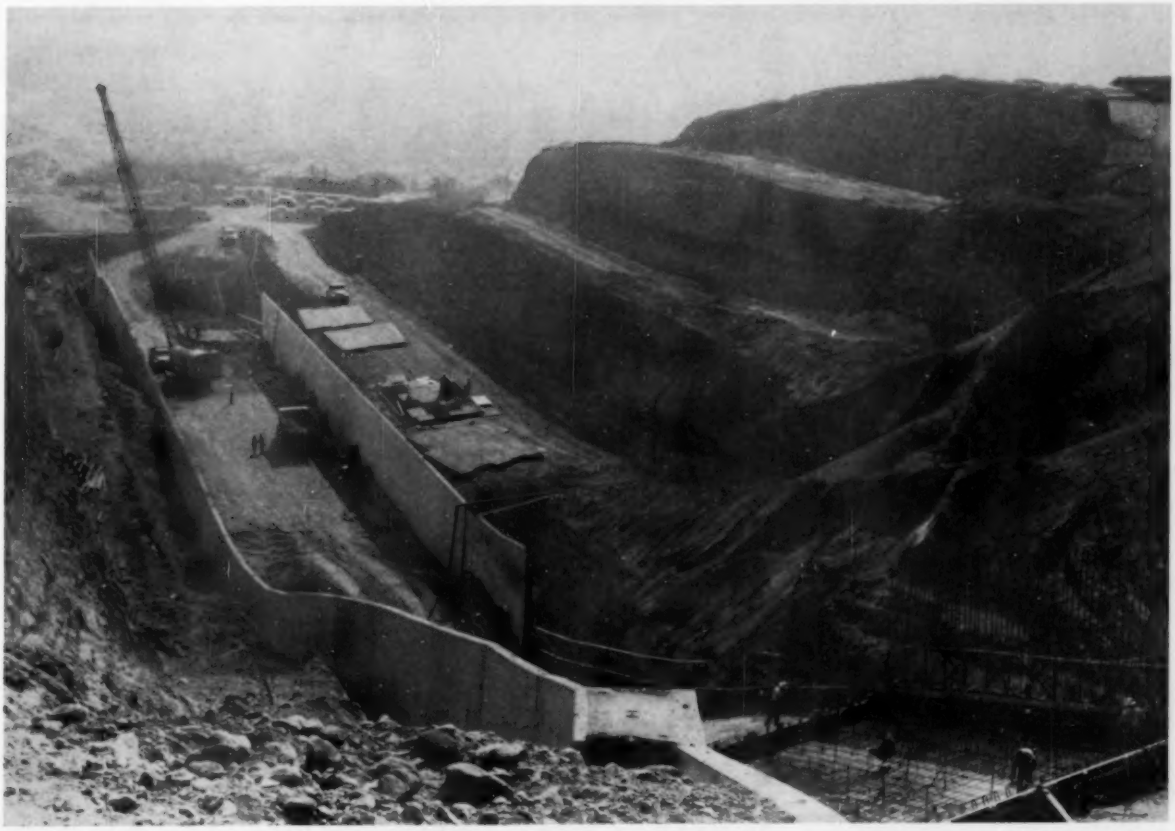
A 10-ft. thick impervious blanket is on the upstream side of the dam. The blanket consists entirely of Zone 1 material. To cut off penetration or seepage of reservoir water further, a core trench was constructed up the right abutment and most of the way across the river valley. Filled with highly compacted impervious material, this trench was 20 feet wide at the bottom, had 1 on 2 side slopes and averaged about 10 feet in depth.

Other features of San Antonio Dam include a spillway whose crest length is 200 feet. The spillway channel leading downhill from the ogee crest is on a super-elevated curve. It was designed to get water away at super-critical velocity. The outlet works consists of three gates measuring 5 ft. 3 in. by 10 ft. in size, placed at an elevation of 2,125 feet above sea level. This compares to the spillway crest of 2,238 feet. Design engineers estimate that the flood control storage potential of the reservoir is 7,110 acre-feet, the debris storage at 2,000 acre-feet and the total storage capacity in the 139-acre reservoir at 9,110 acre-feet. They plan for a peak inflow of 19,000 cfs and a peak outflow of 8,000 cfs.

Job Began in 1954

Beginning early in the 1954 construction season, Winston Bros. Co. got the job off to a fast start by setting up a schedule geared around the daily placement in the dam of 20,000 cubic yards of material. The outlay in equipment was impressive. It was divided as to selection among machines designed to do particular jobs.

For example, the use of power shovels and fast hauling trucks was indicated for about 75% of the work because of rocky material and the way it lay in borrow pits. Two Bucyrus-Erie 54-B shovels with Amsco dippers of 2½-yd. capacity were brought in, along with a 6-yd. Marion Model 4161 power shovel equipped with an Esco dipper. Hauling equipment around the three shovels in-



The elevated, curving spillway channel will drop water at high velocity from the reservoir to the streambed below the dam.

The fleet of scrapers, assisted by dozers, takes out material from a high, sloping hillside cut near the dam's outlet structure.

cluded 14 Euclid 22-ton trucks, including Model 36-TD's and 59-TD's equipped with Allison transmissions. Some of these hauling units were big enough so that a 54-B could dispose of seven loaded dippers of material per truck.

Because much clay excavation also was involved for the impervious dam core, the equipment fleet also included six Euclid scrapers (Model 14-SH) powered by 300-hp Cummins diesel engines. The horsepower on these engines had been increased by a field change of both camshafts and pistons.

A sizable investment in auxiliary equipment also was necessary to handle the dirt after it was dug and hauled. There were 12 Caterpillar D8's on the job, for example, one of which was a McCoy Special, for doing various leveling and bulldozing jobs, assisting as pushers and building haul roads. The principal tamping unit was a Southwest C-50 pneumatic compactor pulled by a Caterpillar DW21. A McCoy manipulator bar and chain, with two rows of teeth mounted on the instrument, was attached to one of the tractors for dragging out oversize rock and blending the impervious core material with wa-

One of the 2½-yd. shovels works in the streambed loading out river-run cobbles. The stone is used for fill in the pervious zones of the dam and also for wave protection.

ter. Also on the job were two Caterpillar No. 12 motor graders for haul road maintenance and miscellaneous leveling, plus two 4,000-gal. water trucks built on Euclid and Caterpillar DW10 prime-mover units.

The contractor brought this equipment to bear with the view toward building the dam in a hurry. All power shovels were placed in the resevoir borrow area just upstream from the dam proper, so that removal of the necessary material would help create additional reservoir capacity. The hauling units assigned to these power shovels soon were shuttling over haul roads to the dam.

Excavation in the big and easily accessible borrow pit was nevertheless difficult. Over a period of many hundreds of years, San Antonio Creek had washed the material down from the mountains, and its sluicing movement had worked the various particles around each other so that a high degree of compaction existed in the pit-run material. This made for some rugged power shovel loading. Winston Bros. Co. got the most out of its equipment, however, by maintaining haul roads which led past each power shovel.

Trucks Double-Spotted

A double-spotting loading arrangement was used so that while a machine loaded one Euclid another Euc would have room and time to back in. The operators on the 54-B's made seven passes with the 2½-yd. dippers heaped to capacity to load a Euclid. They turned out from 140 to 165 such loads in an eight-hour shift. The larger Marion 4161 needed fewer cycles per load. As the hauling units reached the dam with the rocky material, they end-dumped it in lifts up to four feet in thickness. Bulldozers did the leveling.

The impervious clay brought in by the Euclid scraper fleet came from the high hillside location of the spillway, where a deep cut was necessary to provide passage for the water. In the early stages of this work, some spectacular downhill hauling was done over steep haul roads having grades as high as 35 to 45%.

Unusual care was necessary to place material in the fills to best advantage. Because it was impossible to dig all of this material without bringing in some fairly large rocks, the cobbles had to be removed after the lifts were spread. This was done by the McCoy manipulator bar, which reached down with two rows of teeth and brought large rocks to the surface. The rock then was pulled out on the surface by a drag chain. Whatever limited amount of objectionable stones appeared from time to time were removed. Moisture was also added during this step by water trucks so that some degree of mixing and blending would be achieved by the manipulator bar.

When the optimum amount of moisture had been placed in each lift, thicknesses up to 12 inches were compacted in from four to six passes. At a stage when practically 100% of the fill had been placed, the average in-place density measured for the whole job was 96.5% —1.5% higher than the 95% compaction demanded by specifications. According to job engineers, the use of heavier full-oscillating pneumatic compaction equipment and a somewhat more careful attention to mixing and blending soil with moisture made the excellent results

Continued on page 74

Grouting of riprap at the lower end of the steep spillway channel will prevent excessive scouring at this critical point. The American truck crane swings a Gar Bro bucket.

Before haul roads were built into the red quarry, the Tatkos lowered shovels down the 45° slope with tractor-mounted winch.

Modern Methods Make Slate Quarries Pay

MODERN methods are making the slate business pay off for the six enterprising Tatko brothers of Middle Granville, N. Y.

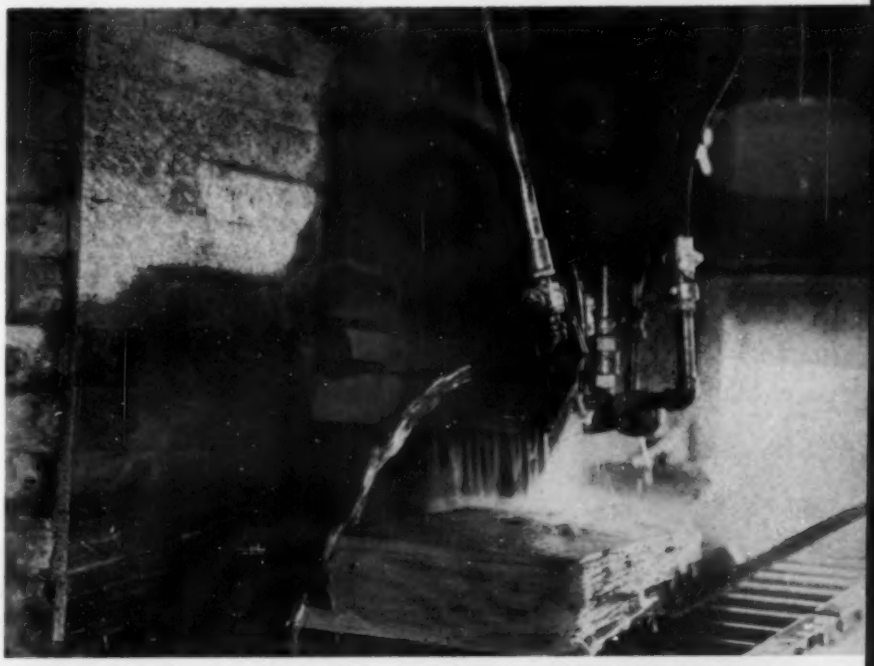
They are John, Michael, Remus, Edward, Everest and Paul, who proudly claim that they are the largest flagstone producers in the slate industry in the United States.

John is president of the Tatko Brothers Slate Co., Inc.; Michael is vice president; Remus is secretary-treasurer; and

(Left) This is the Tatkos' Hatch Hill quarry. Both of the excavators are 15-B's.

John Tatko (above) is head of Tatko Bros. Slate Co. He modernized the firm.

Largest Tatko excavator is this 1½-yd. cambered-boom dragshovel, shown loading overburden to a Mack dump truck. The 38-B was bought to speed up excavation.



(Above) Production of slate and flagstone was increased with the introduction of the diamond-wheel cutoff saw. (Below) Slate products are stockpiled in Tatko yard.

Edward, Everest and Paul are stockholders.

Middle Granville is a pleasant village of about 1,000 persons located in the rolling hills of east-central New York, a short distance west of the Vermont border. Two mountain ranges—the Adirondacks of New York and the Green of Vermont—are each less than an hour's drive from the village.

Middle Granville is in the heart of a rich slate belt seven miles wide and 20 miles long in eastern New York and western Vermont. The slate veins were created in pre-glacial times by geological pressure.

Sharp-sloped quarries, above which cone-shaped waste piles and the inclined cableways seemingly act as sentinels, frequently crease the hillsides. Slate comes from the quarries in various shapes and hues—unfading green, light and dark; unfading mottled green, light

Six Tatko brothers of Middle Granville, N. Y., boost their production by mechanization.

and dark; unfading mottled purple, light and dark; unfading Vermont purple; unfading New York State clear purple; gray; black; green; and unfading red.

The quarries have been worked for more than a century. Five of those now in use are operated by the Tatkos—a red quarry in Middle Granville, the Hatch Hill quarry near Middle Granville and three quarries at North Poultney, Vt.

According to John Tatko, red slate is found only in Washington (Middle Granville) County, N. Y. He said that his firm had the world's largest working deposit of red slate.

Tatko Slate Co. is not a localized operation. The firm ships and sells its roofing, flagstone and flooring in all sections of the United States. Much of the slate is transported on the Tatkos' own fleet of semi-trailer trucks.

Modern methods of quarrying and preparing and shipping the finished product are prominent factors in the success of the Tatko firm.

Modernization in the Tatko quarries means, among other things, mechanization where practical. Tatko, in fact, claims some mechanical firsts for the slate industry.

He believes that his firm was the first to use power shovels for actual work in the pit itself to dig and load out waste material.

"Shovels in slate quarries are a rather new thing," Tatko explained over a cup of coffee. "They had been used in slate quarries before we got our first 15-B (Bucyrus-Erie), but others had used them only for stripping. We took the machines into the pit."

The Tatkos now deploy 10 small Bucyrus-Erie excavators, ranging in size from ½ to 1½ cubic yards, in the quarries. The excavators are rigged either as shovels or dragshovels and sometimes as draglines or cranes.

Each of the quarries utilizes a Caterpillar D7 tractor, an invaluable machine which performs such important tasks as stripping, leveling, spoiling, cleaning and all the important rigging jobs. Each of the machines has a Hyster towing winch, which is used for rigging, towing and for letting shovels down steep inclines into the pits.

Claim Other Firsts

Other slate-industry firsts which the Tatkos claim include:

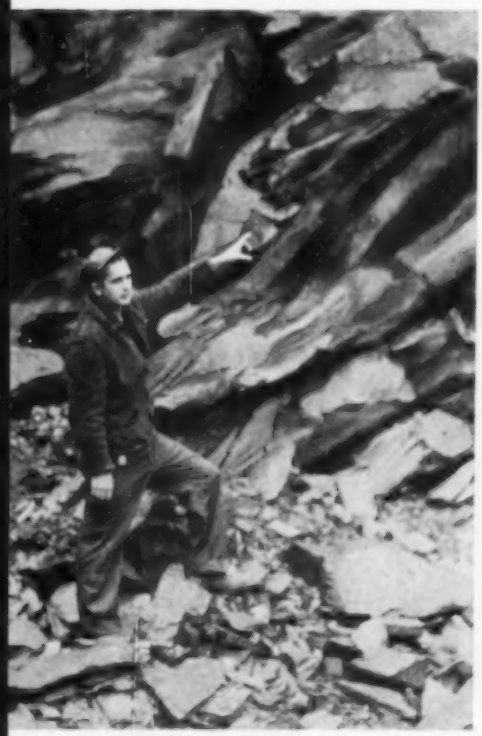
1. The introduction three years ago of wagon drills for deep hole drilling of 20 to 150 feet. Hand-held drilling tools formerly were used exclusively. The maximum depth was 22 feet, unless rods were added.

2. The introduction of carbide jack bits for drilling hard rock. "This is a time and money saver," John Tatko explained. "The steel bit could not penetrate some of the hard rock found in slate quarries as effectively as the carbide bit."

3. The introduction, for reasons of safety and greater capacity, of alloy steel chains for slings, rigging and chain dumpers. "The old timers formerly used ⅛-in. chain," John Tatko continued. "Now, with alloy steel, we can use ½ or ⅜-in. chains to do the same work."

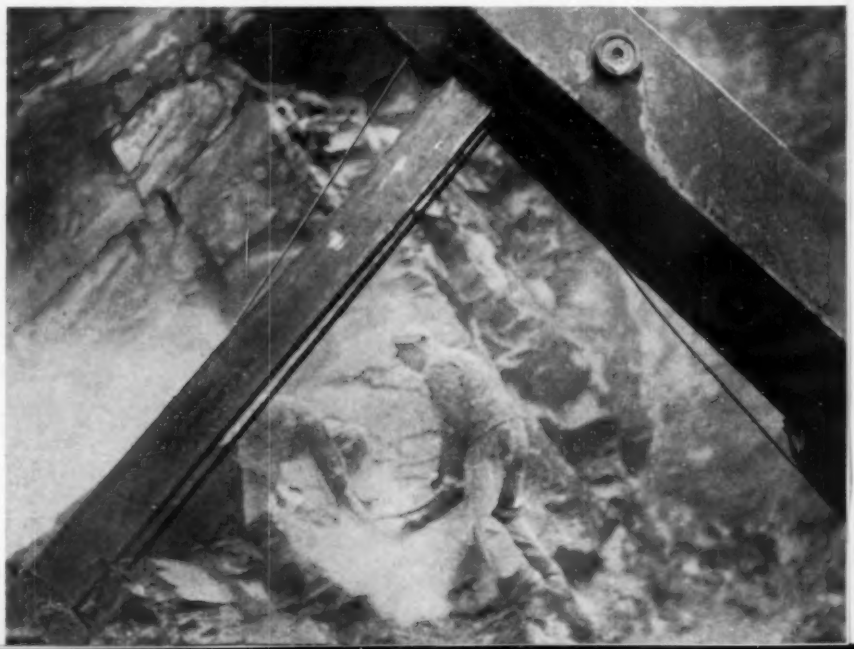
4. The introduction of the diamond-wheel cut-off saw in the manufacture of slate and flagstone. Live-roller conveyor lines, which are fed by fork lift trucks, serve the diamond saws. The saws cut stone which can not be cut by hand because of the "one-direction" grain.

5. The use of four Sauerman anti-friction bearing electric stationary hoists to hoist carriages up inclined cableways. The hoists weigh 1½ tons and have a single line pull speed of 700 fpm.



Edward Tatko points to a vein of good slate in the 100-year-old red quarry.

"Framed" by a boom and dipper stick of a shovel, a workman drills slate rock in the red quarry. Slabs later are removed from the quarry and processed further.



Sometimes the shovels are utilized to load out good slate slabs to trucks.

6. The introduction in 1946 of the fork lift to move slate blocks and slate products on flush-type wood pallets.

7. The introduction of the Tatko pallet—John Tatko patented it in 1954—on which the finished slate products are stacked vertically. A slate is placed into slots at either end of the pallet to secure all of the slate without the use of strapping.

The vertical pallet is an important time saver. It eliminates double handling of the slate products after they are processed and prepared for distribution.

With the old-type pallet, the horizontally-stacked material could not be transported over the highways because of breakage. This meant that after the slate and flagstone had been processed and placed on pallets at the mill, workmen had to remove them individually and stack them vertically on the semi-trailer trucks. Three men required about three hours to load 15 tons on a trailer.

Now, with the Tatko Pallet, one man can take a fork lift and load pallets on the trailer in from 10 to 15 minutes. The pallets are utilized for both rail and truck travel.

The Tatko pallet, composed of 150 pounds of light-weight lumber and nails, has a capacity in excess of 3,000 pounds. Middle Granville area manufacturers make the pallets, which originally measured 44x60 inches. John Tatko plans to reduce the width to 42 inches to allow for easier loading of trailers and rail shipments.

The Tatkos scale weigh all of their irregular and non-dimensioned stone and

(Above) Workmen drill, plug and split the stone on the top of red quarry in further processing. (Below) At another Tatko quarry, workmen split stone after it leaves saw.

Trimmed slate is stacked on a Tatko Pallet at one of the North Poultney (Vt.) quarries. The Tatkos deliver slate within 350 miles of Middle Granville in their own trucks.

sell it by the pound. Formerly, flagstone was measured and sold by the square foot. The Tatkos deliver their products within a 350-mile radius of Middle Granville on their own fleet of Mack diesel trucks. Rail transportation is utilized beyond 350 miles.

Despite a prospering business, you'll see the Tatkos dressed in work clothes every working day—and not just for show. They work right along with their 100 or so employees—operating shovels, bulldozing, rigging, blasting, or what have you in a slate quarry.

John is supervisor of the red quarry. He is assisted by Edward. Remus supervises the No. 1 and No. 2 quarries at North Poultney. Quarry 3-A is supervised by Mike, assisted by Paul, the youngest brother. Everest is in charge at the Hatch Hill quarry.

The Tatkos can remember when things weren't so good in the slate quarry business. When John, Mike and Remus acquired the business in 1933 and formed a partnership, the operation consisted of one quarry. This quarry is now abandoned and is being leveled with fill. Located adjacent to it are the firm's office, shipping yard and maintenance facilities.

Barely Made Living

"We barely scratched out a living in those first years," John said. "We put everything that we made—and that was little—back into the business. Almost all the work was done by hand. The derrick, inclined cableways and the air compressor were characteristics of quarries."

Gradually the Tatkos' business began to progress. Mechanization provided the impetus.

Two of the firm's timesavers are illustrated here—the forklift and the Tatko Pallet, which allow the truck driver to load the vertically-stacked slate to the truck quickly.

"The slate business was 25 years behind the times," John continued. "The first big change in our business came in about 1948."

Overburden is the major problem in the quarries. The Tatkos stage small blasts every day or two. Large blasts are spaced a few weeks apart. Black granular powder is used to move slate rock; DuPont Red Cross Extra 60, 40 and 20% dynamite is employed against waste rock. Blasting is done on 3 to 5-ft. centers. Millisecond delays are used for large blasts.

Blasting of slate rock is a science in itself," John Tatko said. "The rock must be moved in a body and it must be left with three free sides (face, side and end). There should be a bed free to move the rock on."

The percentage of overburden is extremely high at John's red quarry, which has been worked off and on for 100 years (John has had the quarry since 1946). The waste rock runs from a depth of 40 to 140 feet.

Machinery at the red quarry includes four Bucyrus-Erie machines, including a 1½-yd. 38-B and three ½-yd. 15-B's; two Ingersoll-Rand wagon drills and three I-R air compressors; one electric Sauerman hoist engine; a Cat D7; two fork lifts; two Mack 10-wheel dumps; and a Jeep.

Michael Tatko, the youngest of the brothers, demonstrates use of dragshovel.

The 38-B, which the Tatkos purchased last summer to speed up the excavation of waste, is used with either dragshovel or shovel front ends. It has a cambered dragshovel boom. After its purchase, the 38-B's first assignment was to fill in the abandoned pit near the Tatko office to provide additional storage area.

The 15-B's, which are used with either crane, dragshovel or shovel front ends, perform general quarry tasks. As dragshovels, they work along the edge of the quarry. As shovels, they dig and load overburden. As cranes, they move wagon drills on steep inclines.

Roads now serve the bottom of all the Tatko quarries. Trucks haul the overburden to spoil piles near the pits. The red quarry was without an access road until 1952, and that provided the Tatkos with a special problem.

The quarry's slate vein is generally at a 45° slope. At one point the slope is 65°. Cat winches were used to lower the machines down the slope.

"We winched those 15-B's up and down the slope nine different times before and after big blasts," Tatko said.

Remus Tatko's equipment at the No. 1 and No. 2 quarries at North Poultney includes a 22-B, 15-B, D7, several fork lifts, two International and four General Motors 10-wheel dumps, Jeep station wagon and three cutting mills—two for flagstone and stock and one for flooring. The mills have five diamond saws.

All of the Tatko quarries utilize a Caterpillar D7 tractor. This bulldozer is at work in Quarry 3-A at North Poultney. The overburden at 3-A is about 40 feet deep.

Both pits contain unfading green and mottled purple slate. Both have been worked since 1947. Overburden, consisting of rock and clay, goes to a depth of from 40 to 70 feet. Remus takes some of the soft clay by rigging the 22-B and 15-B as draglines.

Michael and Paul's Quarry 3-A at North Poultney has been worked only three years. It is producing unfading green and unfading clear purple slate. The overburden of rock, shale and dirt is about 40 feet deep.

Quarry 3-A Equipment

Equipment at Quarry 3-A includes a 22-B, 15-B, D7, several fork lifts, two GMC and one International 10-wheel

Continued on page 73

Excavators are rigged as dragshovels, shovels and cranes by the Tatkos. (Left) Shovel is used in the Hatch Hill quarry. (Right) Crane lowers wagon drill to ledge.

Short Pipelines Are Its Specialty

Delivery to consumer is the ultimate end to a pipeline. Contracting and Material Co., Evanston, Ill., has helped to supply many final links for bringing pipeline products to Chicago.

THE old grain elevator office in the quiet village of Herscher, Ill., about 45 miles south of Joliet, had a new lease on life. In late 1955, it was the field office for Contracting and Material Co. of Evanston, Ill., which had a pipeline contract nearby.

Inside the office that must have seen many wagon loads of grain cross its scales stood an old pot-bellied iron stove. In one corner a roll-top desk of an earlier day stood open, exposing its many little drawers and pigeon holes. Next to the high, old-fashioned desk stood a smaller, flat top desk. Looking almost out of place in these surroundings, on top of the smaller desk was a Motorola radio transmitter-receiver set. The town was as quiet as only a village can be. The office was quiet. Suddenly the stillness was broken.

A loud call—"KSE 458 come in" —broke the silence. The microphone was picked up, the button pressed and the business of laying a pipeline came into the room from miles away. Arthur J. Fry, field superintendent for Contracting and Material Co., answered the call. He reached for a roll of blueprints from the roll-top desk, spread them out and, referring to one, worked out a problem with the caller, one of his foremen on the line.

A Cleveland Model 320 trencher with extra conveyor section cuts a smooth-sided 82-in. deep trench on the Contracting and Material contract near Braidwood, Ill.

A few moments later the phone at Fry's elbow jangled and for the next five minutes a detailed account of the day's work was discussed with R. D. Cagney, one of the partners of the contracting firm. R. D. Cagney is in charge of all pipeline and underground work at Contracting and Material Co., a company that has been in the general contracting business for many years.

Family-Run Firm

The Evanston firm, which was started by William P. Cagney 36 years ago, is a family-run firm. Four sons of the founder now handle the business. In addition to R. D. Cagney, the eldest of the sons, there's William P., Jr., in charge of highway and electrical work; Frank X., who manages the main office; and Donald P., in charge of purchasing.

The company originally started operations as a street and highway paving contractor. Much of the Chicago area's street paving was done by the company in the days of team hauling, steam shovels, steam rollers and hard-tired trucks. Later, the firm branched out and it now does general contracting and engineering.

In the late 30's and early 40's rural

Pipe shipped in by rail is loaded to a White truck and trailer by a 22-B crane.

A Bucyrus-Erie ¾-yd. 22-B is one of four dragshovels which handle the ditching when boulders or drifting sand are encountered. The excavators also work on blasted rock.

electrification was one of its important undertakings. There was also some gas distribution work. In 1945 the first big venture was made into pipeline work. An 18-in. line was laid from near Des Plaines to the North Shore Electric line, a distance of about 15 miles, for Northern Illinois Gas Co. Growth in this direction has been steady since that time.

A three-year project was started in 1946 when underground storage units were put in to store 145 million cubic feet, and a compressor station was erected for Northern Illinois Gas Co. In 1950 the Calumet Loop, 42 miles of 24-in. line, was laid for Chicago District Pipeline Co. In 1951, a 22-mile line of 30-in. pipe was put in for Panhandle Eastern Gas Co., 30 miles of 10-in. pipe were laid for Northern Illinois Gas Co. and a metering station was built for Texas-Illinois Pipeline Co. at Joliet. And so it went. Lines of all sizes and all lengths had become a regular part of the company's business.

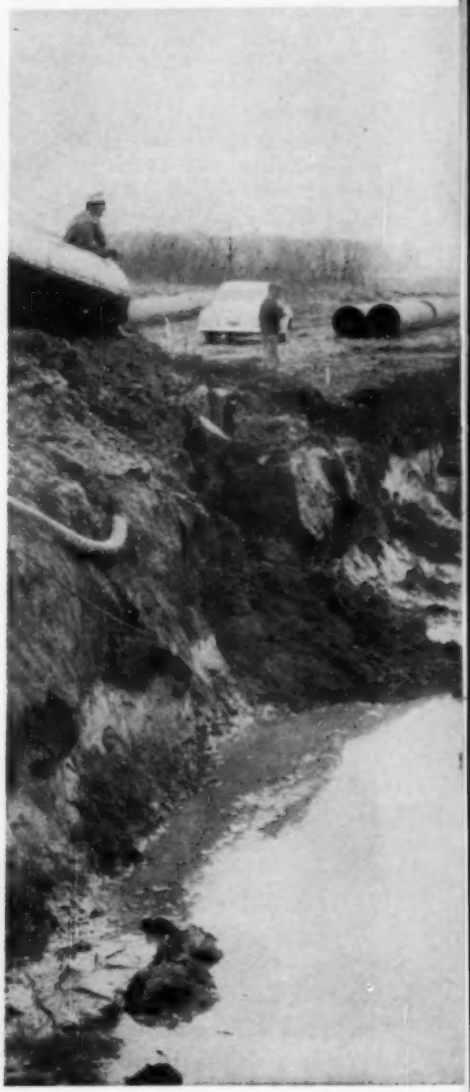
A former grain elevator office at Herscher, Ill., is headquarters for Arthur J. Fry, field superintendent. A Motorola transmitter-receiver set links the office with crews.

Natural Gas Storage Co. of Illinois, for whom the new line was being laid, operates a compressor station near Herscher. There is also a large natural underground storage area adjacent to the compressor station. It was from this station that additional transmission facilities were required.

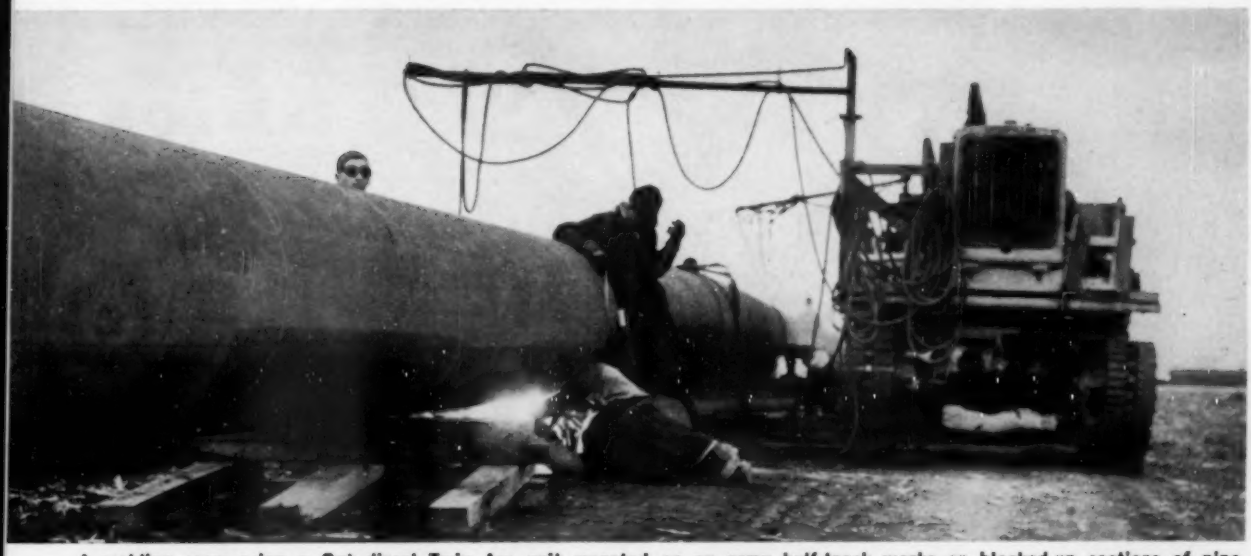
The Texas-Illinois main line, which runs to the Joliet metering station, crosses the Illinois River near Devine. A tie-in at that point back-tracks approximately 31 miles to the storage and compressor facilities at Herscher. The new 36-in. line was being installed for the purpose of returning the stored gas to the main line, at the river crossing tie-in, for transmission to the Joliet metering station. From this station the entire Chicago metropolitan area is served.

All phases of work on the line got underway simultaneously on the day the pipe arrived—October 14. The ROW crew, with two Caterpillar D7 dozers, finished their job in about 11 working days. Their job was small because the line ran through comparatively level farm land for almost the entire distance. Little clearing was required.

The pipe, which was National Tube grade X52 of $\frac{7}{16}$ and ½-in. wall thick-



(Above) A Cinch hydraulic bending machine shapes a pipe section held by a Cat D7 sideboom. (Below) Pipe is hauled to the right-of-way and strung out by a D6.



A welding crew using a Cat diesel Twin Arc unit mounted on an army half-track works on blocked-up sections of pipe.

ness, was delivered at two points. Part went to Herscher and the rest to Braidwood. From there it was loaded to seven company-owned trucks—five Internationals, one GMC and one White—by a Bucyrus-Erie 22-B crane. Along the line a Cat D6 sideboom and an Allis-Chalmers HD-20 tow tractor assisted in the unloading. This crew, according to Field Superintendent Fry, did a remarkable job on the basis of both accuracy and cost.

Pipe bending was done with a Cinch hydraulic bending machine and a D7 sideboom. A maximum per-joint bend of 30° was allowed. Welding followed rigid specifications. The hot pass crew was not allowed to work more than five minutes behind the stringer bead crew.

Four Caterpillar diesel Twin Arc welding units were used. There were four welders on the stringer bead and four on the hot pass, two men for each of the four machines. An Onan self-propelled buffing unit was used to buff the bevels and the stringer bead. Lincoln Fleetweld No. 5 rod was used on the stringer bead and Fleetweld No. 85 was used on the filler. Welders were carefully selected before hiring. They

(Left) A 38-B 1½-yd. dragshovel excavates a wide trench through caving sand. (Above) A pipe section is processed by a Perrault coating and wrapping machine.

Pipe sections are lowered by an Allis-Chalmers HD-21 into the trench where (below) they are tied-in under two other lines.

were tested in the field by doing a typical weld on a pipe section.

Following the pipe gang, the finish weld was put on by a crew that numbered from 22 to 24 experienced men. Four Twin Arc machines were mounted on an army half-track and four Lincoln 250-amp Hercules diesel and 10 Lincoln 300-amp machines powered by Wisconsin air cooled motors were sled mounted. They were towed by HD-5 tow tractors.

Welds Tested by X-Ray

Preparation of the pipe followed weld testing by Industrial X-Ray Co. A Perrault cleaning and priming machine powered by an International UD-9 engine was cradled by an HD-20 sideboom. Following closely behind was a Perrault coating and wrapping machine on a Caterpillar 583 pipelayer. A $\frac{1}{16}$ to $\frac{3}{16}$-in. coat of asphalt enamel dope was applied. A double wrap, one of 18-in. fiber glass paper and one of 18-in. craft, was also applied in the operation. Four 27-bbl. Perrault dope kettles kept the coating operation supplied. An HD-19 with Tractomotive sideboom was used as a catch-off rig.

Ditching, which went to a 6-ft. 6-in. minimum depth, allowing for a 72-in. cover, went as deep as 12 and even 14 feet in places. For a safe margin a 6-ft.

10-in. depth was held most of the way. Along all roads and at all creek banks the required depth was eight feet to allow a 5-ft. cover. There were four small river crossings and several smaller creeks to negotiate, as well as 17 main highway and railroad crossings and a similar number of minor road crossings. All railroad and main highway crossings were cased.

At the New York Central railroad crossing a double casing was installed. A Crose boring machine holed-through with a 48-in. corrugated casing after which a 40-in. casing was inserted. Space between the two casings was packed with sand. Then the 36-in. pipe was pulled through. The protective pipe coating was built up and more packing was added to keep the transmission pipe in place. Other cased crossings were done with 40-in. casing. The boring gang worked with a 22-B dragline to prepare the boring site and an HD-15 sideboom handled the Crose boring machine.

A cleanup crew closes the trench with a Cleveland 190 backfiller. In the background is the compressor station of Natural Gas Storage Co. for whom the pipeline was laid.

Dragshovels Handle Rock

While most of the ditching was done with two trenchers, a Cleveland 320 and a No. 51 Buckeye, there was considerable swamp, boulder work and drifting sand to be handled by two Bucyrus-Erie 1½-yd. 38-B and two ¾-yd. 22-B dragshovels.

Ledges of solid rock were also encountered. These ledges were found at any depth from grass roots to ditch bottom. They required considerable prospecting to determine depth and extent, plus the usual drilling for blasting. When a ledge of rock was discovered two Gardner-Denver twin drills cradled on an HD-10 and an HD-15 were brought in. A test hole was drilled every 500 feet to determine the extent of the ledge. A 22-B dragshovel would strip to the top of the rock and blast hole drilling followed. Holes were drilled on 3-ft. centers to a depth of 7½ feet for a 6½-ft. ditch and 10 feet for an 8-ft. ditch. For the blasting, DuPont 40% powder and Primacord were used.

Instead of using mats to prevent throw, the blasting area was simply recovered with the stripped material. Two Bucyrus-Erie 38-B dragshovels with 60-in. wide dippers handled the blasted rock sections. In the rock areas the ditch width went to 7 feet 6 inches at the top and 51 inches at the bottom. In areas of a sandy nature a top width of as much as 100 inches was required.

Lowering and tie-in crews worked as one unit. They had three 22-B machines equipped with 1-yd. Owen buckets for clean-out work. Six sideboom tractor units were used. There were two Allis-Chalmers HD-21's, two HD-20's, one Cat 583 pipe layer and one HD-15. Backfilling was accomplished with one International TD-14 and one Cleveland 190 backfiller. The clean-up gang worked with two dozers, one D7 and a D6, and a D8 rock rake.

Work was scheduled at a rate of 120 joints per day—just short of a mile. Crews operated seven 10-hour days, with some putting in 12 or 13 hours as needed.

Maintenance of the equipment was handled on a regular basis. Records were

Continued on page 74

A modern trailer provides quarters for John Myers, field office manager. The firm is staffed by many veterans who have seen service on numerous pipeline assignments.

NOW *bid beating... dirt heaping...* 1956

10% bigger payloads!

Model "75" ... boosted to 20 yds heaped (without sideboards) ... 262 hp.

Model "55" ... boosted to 14 yds heaped (without sideboards) ... 172 hp.

Wide-base tubeless tires and windshield, shown, available as optional equipment.

1 **Wider "Target" Push-Block** makes it easier to make and maintain contact. Helps to cut loading and cycle time.

2 **Straight-Line Ejector Reeving** requires minimum power; leaves more power on Payscraper wheels for faster dumping and spreading. Also speeds re-threading time.

3 **Sturdy Cover Plates** protect new, stronger cylindrical ram and air tanks.

4 **New, Straight-Back Bowl** lets you heap and haul more dirt every trip. Struck capacity, *with sideboards*. 18 cubic yds on "75"—12 cubic yds on "55".

5 **Higher Apron Lift,** bigger apron opening, provides cleaner, more rapid dumping, especially of "sticky" materials.

6 **Fast-Acting Apron,** arms mounted outside bowl, assure quick, positive closing of apron. Payscraper holds the load from cut to fill.

7 **Lowered Draft Frame** provides operator with "control tower" visibility of bowl and push-tractor ... also helps direct push and pull power more efficiently to cutting edge for faster loading.

8 **Larger, Wider Fenders** give greater safety for operator, greater protection for machine.

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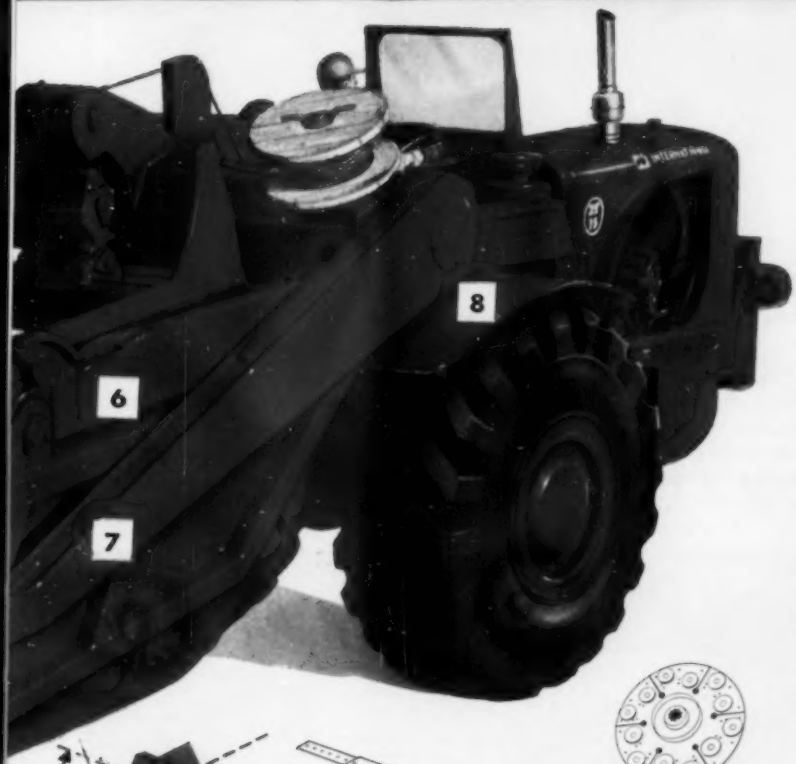

Maximum 52° Oscillation
from right to left takes the stress and strain out of hauls over furrows, rough ground.

Adjustable 3-Piece Cutting Edge
for clean, fast cutting and loading under all soil conditions.

New, Long-Lasting Clutch
of ceramic material and powdered metals, successfully resists heat and wear over longer periods. Available on Model 75 only.

Put the 1956 International Payscraper to work on your job, and watch dirt boil up into its new, straight-back bowl. You've never seen any big scraper load as easily or as fast. In seconds, you've packed in up to 23 heaped yards. Its offset 3-section blade breaks the ground like a sharp-pointed spade. Dirt boils from the smooth-slicing cutting edge and fills the corners to build a full heaped load. Close the apron instantly, positively, on this huge, well-compacted load and you carry all the dirt you've heaped in.

Now, drive easily, effortlessly with safe hydraulic power steering at a fast clip to the fill. Note how the 1956 Payscraper's extremely high ratio of horsepower to capacity and its rapid acceleration to 24 mph top speed add up to more trips per hour than any other self-powered scraper you've ever used. Yes sir, it's a real profitable dirtmover, this 1956 Payscraper! Try one yourself on your job! See your International Industrial Power Distributor for a demonstration.

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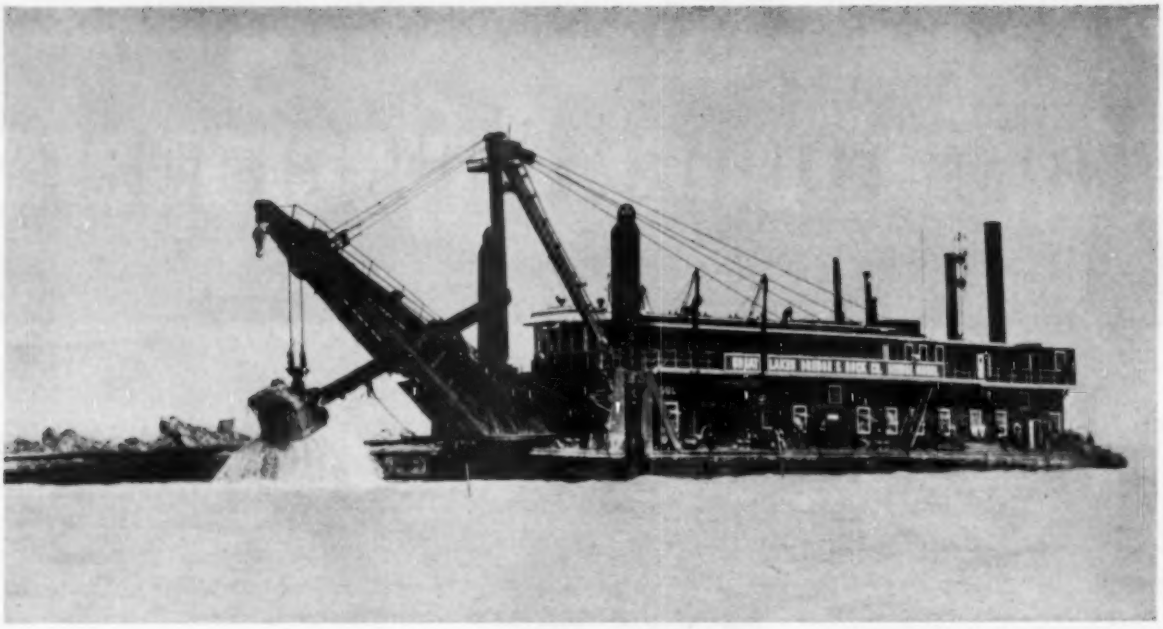


Recently repowered, the Great Lakes Dredge & Dock Co. dipper dredge Mogul is now working on the St. Lawrence Seaway.

News from the Field

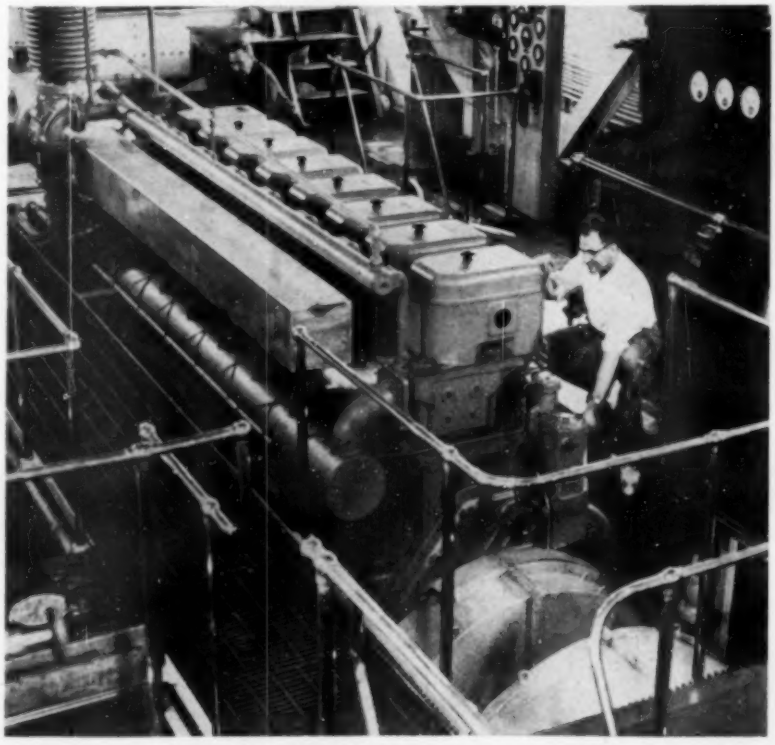
Dredge Mogul Repowered

The largest and most powerful dipper dredge on the Great Lakes is now a part of the tremendous construction force at work on the St. Lawrence Seaway project. Working near Ogdensburg, N. Y., the dredge *Mogul*, owned by the Great Lakes Dredge & Dock Co., Chicago, Ill., will dig a million yards of clay and a million yards of boulders and rock for a new channel in the Chimney Island area.

The Great Lakes Dredge & Dock Co. anticipated a heavy work load when the Seaway project was undertaken last year and has repowered the *Mogul* to do the dredging job along the St. Lawrence and in the many Great Lakes harbors that will be deepened.

The heart of the *Mogul* is its diesel power plant. All major machinery draws its power from one of the four generators which are direct connected in tandem to the main engine. The main hoist, the thrust, swing and backing machinery, two forward spuds and the stern or walking spud and the deck winches are all powered by electric motors.

With each complete digging cycle, the engine must go from no load to approximately full load in a matter of seconds. Full load is maintained for about seven seconds during the hoisting operation and then drops off sharply



Chief Engineer John Hoynosh sets the Woodward governor of the Mogul's new Nordberg diesel engine while Merlin Taylor, his assistant, is ready to make adjustments.

as the dipper is swung over the scow for dumping. One-half load is again required when hoisting the dipper up from the scow and swinging back for relowering to the river bed. The entire cycle takes only 62 seconds.

The *Mogul* had relied on an eight-cylinder Busch-Sulzer engine for 25 years. Since the end of World War II, however, the two-cycle engine had begun to show its age. Work at Atlantic coast naval bases without the benefit of a closed cooling water system had shortened the effective life of the engine.

Today the heart of the *Mogul* is a Nordberg Supairthermal in-line engine with eight cylinders of 13-in. bore and 16½-in. stroke. Both the old engine and the new Nordberg are eight-cylinder diesels, rated 1100 hp at 300 rpm.

Performance data from Chief Engineer John Hoynosh reveals interesting comparisons. Fuel oil consumption has decreased 37%. Under normal operating conditions, fuel consumption for an eight-hour working day has dropped from 240 to 150 gallons. Consumption of lubrication oil by the new four-cycle Nordberg has also decreased considerably as compared with the requirements of the two-cycle engine. "Smoking black" is a cry which is no longer heard aboard the *Mogul*.

While the *Mogul* was being repowered at the Knudsen Bros. Shipbuilding & Drydock Co., Superior, Wis., the generator shaft, flywheel and inboard bearings weighing 10 tons were pulled and sent to Nordberg's St. Louis (Mo.) plant for reconditioning. This service included repolishing the shaft and rebabbitting the bearings.

The Nordberg Supairthermal engine drives four direct current generators through a Falk flexible coupling. A 300 KW generator furnishes power to two 187½-hp motors that raise and lower the main hoist by a single differential drum grooved for twin 2-in. diameter cables. The movement of the dipper handle in and out is by means of a motor-driven pinion operating on a rack attached to the handle. The operation of this thrust machinery determines the digging depth and helps to position the bucket over the dump scow. The swing of the hoist is controlled through a 24-ft. diameter circle by a single 35-in. diameter grooved drum. Both machines are powered by 75-hp motors which draw their power from two 75 KW generators. The backing machine which pulls the dipper under the front of the hull on the digging stroke and the motors which lower the spuds to support the hull and hold it in place during digging operations and other auxiliaries draw power from the fourth generator, rated 100 KW.

The 700-ton *Mogul* has a length of 156 feet and beam of 42½ feet. The Bucyrus-Erie Co., South Milwaukee, Wis., and Manitowoc Shipbuilding Co., Manitowoc, Wis., designed and built the dredge in 1929. The boom is 60 feet long and carries a 59 or 69-ft. handle, depending upon the dredging job. The working depth of the dredge is from 18 feet minimum to a maximum of about 50 feet. Several different dippers are used, varying from an 8-yd. rock dipper to a 12-yd. mud dipper. The *Mogul* has dug more than 19,000 cubic yards in one 24-hour day and its main hoists exert a total bail pull of 150 tons. Because of these outstanding performance capabilities, the *Mogul* often has been assigned the toughest jobs on the Great Lakes.

Augers Dig Permafrost

"Operation DEW," a joint project to provide "Distant Early Warning" protection for the United States and Canada, is weaving a web of radar across the top of the North American continent. Among the problems faced by the crews building the vast chain of outposts in the arctic is setting thousands of piling and poles in the flint-hard, permanently frozen tundra. This forbidding type of terrain, called permafrost, is composed largely of silt, often containing highly abrasive quartz sand and gravel, which is sometimes full of heavy cobbles up to 6 inches in diameter, solidly and permanently frozen in an icy mass.

Contractors working in Alaska learned that conventional earth augers could not be used in permafrost. They have found an answer for this subborn combination of ice and earth in the "Alaskaug" all-purpose auger, a tool that cuts its way through frozen soil, hard packs and most other difficult terrains, including many solid rock formations.

This auger, manufactured by Alaskaug, Inc., Cleveland, Ohio features a tapered helix of chrome-molybdenum steel with a series of heavy-duty cutting bits stepped around the edge of the spiral and a hollow mill cutting head in place of the conventional piercing point. The drill head and bits are tipped with sintered tungsten carbide, similar to modern high-speed machine tools, to provide tough, durable cutting edges.

The thousands of holes required for Operation DEW are being dug with Alaskaug augers in various sizes up to 32 inches. Piles and poles are set by freezing in place. To obtain water for this purpose, the augers also are being used to tap the ponderous arctic ice.

ARBA Elects Officers

A new slate of officers and directors of the American Road Builders' Association was named at the organization's 54th annual convention in Miami Beach, Fla., January 11-14. John N. Robert-

At the northernmost point of Alaska, a crew using track-mounted equipment sets piling in flint-hard permafrost for one of many radar stations in "Operation DEW."

son, director of highways, Washington, D. C., was re-elected president. Other officers are Charles M. Noble, chief engineer, New Jersey Turnpike Authority, New Brunswick, N. J., northeastern vice president; Charles W. Smith, president, Smith Engineering and Construction Co., Pensacola, Fla., southern vice president; Julien R. Steelman, president, Koehring Co., Milwaukee, Wis., central vice president; W. A. Bugge, director of highways, Department of Highways, Olympia, Wash., western vice president; and Jennings Randolph, assistant to the president, Capital Airlines, Washington, D. C., treasurer. Twenty new directors were also named.

Pile Hammer Tested

Operational tests on the world's most powerful pile hammer have been completed at the Dover (N. J.) plant of the McKiernan-Terry Corp. The hammer will be used in offshore oil exploration in the Gulf of Mexico.

The steam-driven hammer weighs 20 tons, has a 10-ton ram and delivers 60 blows a minute with a force of 60,000 foot-pounds. It was designed and built by McKiernan-Terry for Brown & Root, marine contractors of Houston, Tex. The Brown & Root firm is one of the principal contractors involved in the construction and installation of "Texas towers," the man-made islands which support drilling equipment in the Gulf.

The towers are held in place by piles driven through their framework into the floor of the ocean. As the tidelands search continues, the towers are being installed farther out from the shore. The new pile hammer is specially designed for this type of service.

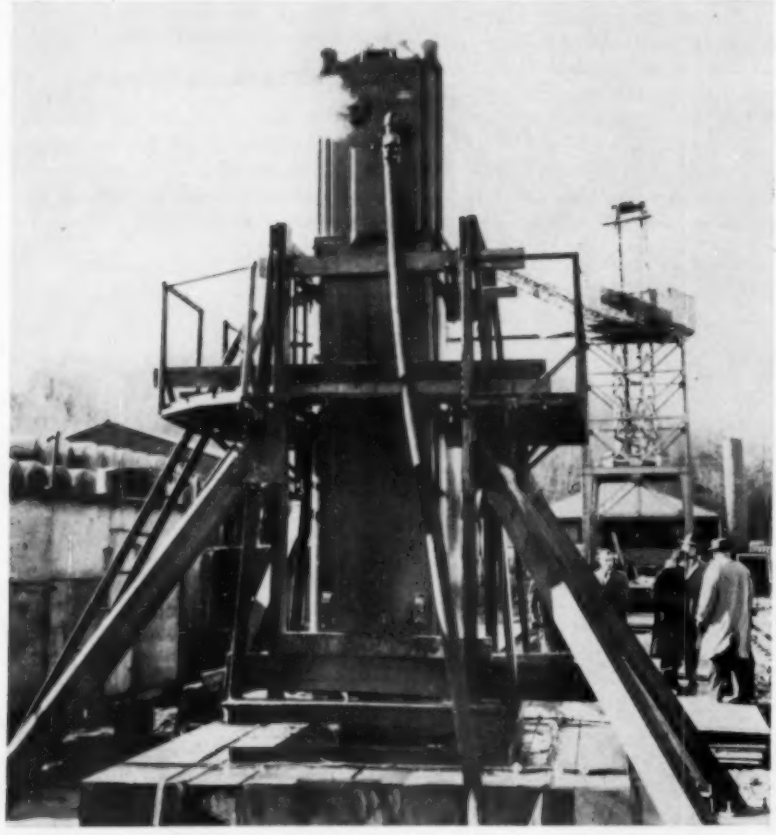
N. J. Turnpike Revenues High

New records in traffic and revenue for the New Jersey Turnpike were set in 1955, according to the annual report of the commissioners of the turnpike authority. A total of 25,888,391 revenue vehicles used the 118-mile turnpike in 1955, an increase of 5.43% over 1954. The volume was well in excess of the preconstruction estimates of engineering consultants.

Tolls aggregated $21,122,503, an increase of 1.76%, while revenues from concessions amounted to $1,859,952. Together with income from investments and other sources, the combined revenues for 1955 amounted to $23,905,624, compared with $23,217,762 in the previous year. All requirements of reserve funds provided for in the bond agreements covering the various bond issues are expected to be met in 1956.

Construction work on the Newark Bay-Hudson County extension and the direct connection with the Pennsylvania Turnpike generally was on schedule

Continued on page 46



Sixty blows a minute are struck by the world's most powerful pile hammer as it is tested at Dover, N. J. The McKiernan-Terry unit will drive piles for "Texas towers."

Louis Garavaglia, Sr.

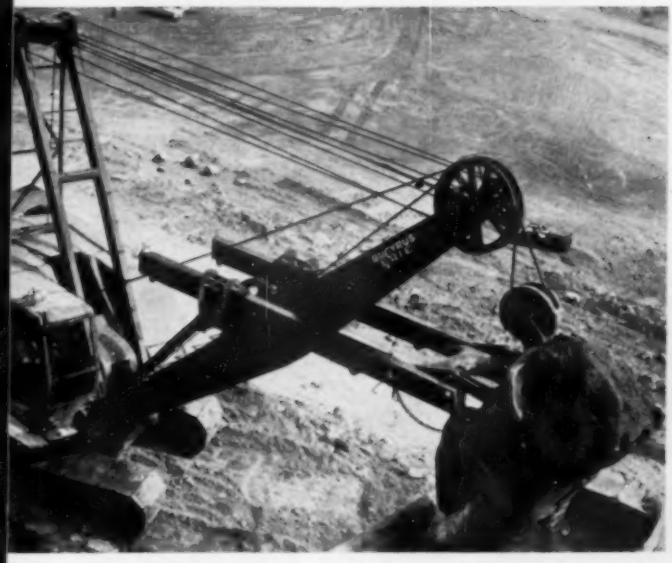
Louis Garavaglia, Sr., 70, a prominent figure in Michigan construction for more than 50 years, died January 8. He was active as a supervisor and consultant for the firm he founded, Louis Garavaglia, Centerline, Mich., at the time of his death.

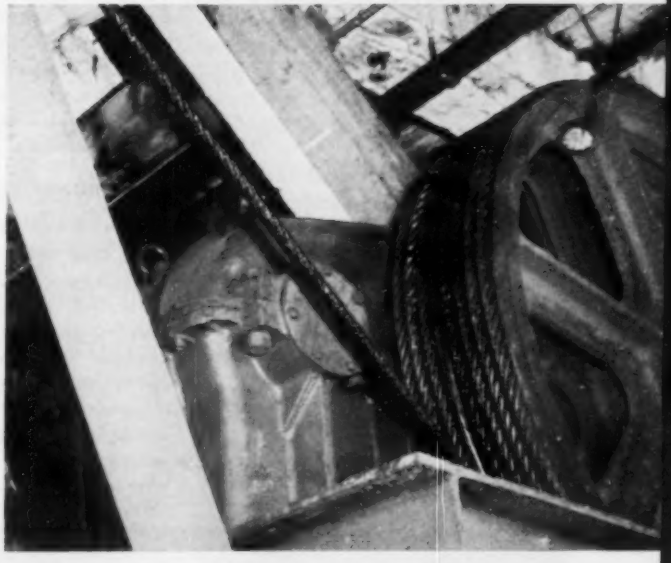
Mr. Garavaglia was born on a farm near Milan, Italy. He came to the United States and started in the excavating business in 1905 at Detroit. He worked there as a contractor until 1914, when he joined a construction battalion of the Army Corps of Engineers at Norfolk, Va. He remained with the Engineers throughout World War I.

In the early 1920's he purchased his first steam shovel and subsequently dug the excavations for several of the large hotels and many major public buildings in the downtown Detroit area. He won the first of his many highway contracts from the state of Michigan in 1931.

Highway and bridge work has played an important part in the growth of the Garavaglia firm. It took part in the construction of Detroit's Willow Run Expressway in the early 1940's and the John Lodge Expressway in 1948. The firm has built 30 of the grade separations on the Lodge and Ford expressways. At the present time, the Garavaglia firm is completing a section on the Indiana East-West Toll Road near the Illinois-Indiana state line.

Mr. Garavaglia lived at 490 Bournemouth Dr., Grosse Point Woods, Mich. He is survived by his wife, Anna, and four children.





EXTRA FLEXIBILITY—Wire rope encounters fast sheave action, reverse bending, constant stop-and-start operation on many jobs. When this same rope must also lift or pull heavy loads, an unusually flexible, strong wire rope is needed.

Rope jobs like paver skip hoists, overhead cranes, large shovel and dragline hoists, and sawmill carriages demand these qualities. That's where the use of 6 x 37 Red-Strand wire rope saves time and money.

Where will 6x37 Red-Strand improve your wire rope service?

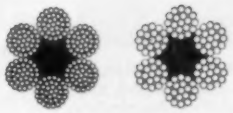
Look at a cross section of 6 x 37 wire rope. You see three rings of small, uniformly sized wires in each strand. This differs from a rope construction like 6 x 19, which contains fewer and larger wires.

The *smaller size* wires make 6 x 37 more *flexible*. The *larger number* of wires maintains rope *strength*.

Would this combination improve your wire rope service? Would it solve a problem for you?

Check with your Leschen man. He can help you.

Leschen's 64-page Wire Rope Handbook tells you all about 6 x 37 and other Red-Strand wire rope constructions. Ask or send for your free copy.



6 x 37 6 x 19

LESCHEN WIRE ROPE DIVISION
H. K. PORTER COMPANY, INC.
St. Louis 12, Missouri

LESCHEN HKP
HERCULES Red-Strand® WIRE ROPE

News . . .

Continued from page 44

despite a steel shortage, the report said. It was expected that the Newark Bay Bridge of the extension would be opened to traffic as far as Bayonne, N. J., on March 1, and the remainder of the extension by July 1. The Pennsylvania connection will be opened about June 1.

Road Bill Introduced

A new bill authorizing federal aid for highways was introduced recently in the House of Representatives by Congressman George H. Fallon, chairman of the House subcommittee on roads. The bill authorizes $24.8 billion in federal funds for completion of the proposed 40,000-mile interstate system in 13 years and approximately $1.5 billion in federal funds for construction on the primary and secondary systems and urban extensions for the next two fiscal years.

An important feature of the Fallon bill is that the federal government would furnish 90% of the funds for the interstate system, with the states putting up 10%. The total amount in federal and state funds for the interstate routes would be about $27 billion. No provision for financing the program was included in the measure.

Louis Dierks Retires

Louis E. Dierks, a vice president and member of the board of directors of

Sauerman Bros., Inc., Bellwood, Ill., recently retired after 42 years of service with the firm. Dierks is a well known figure in the construction field and sand and gravel industries. He is a life member of the American Society of Civil Engineers and the Chicago Engineers Club. He will remain with Sauerman as a consultant.

Publicize 1957 Road Show

Harvey A. Scribner, chairman of the Road Show publicity committee for the 1957 American Road Builders' Assn. convention and Road Show, has announced that the committee now has available advertising material which equipment distributors can use to aid in promoting the show. Small cuts for use in advertising, stickers for use on letterheads, and other mailing material, envelope stuffers and reprints are offered free of charge. The convention and Road Show will be held at Chicago, Ill., Jan. 28-Feb. 2, 1957.

Information and sample material may be secured from the American Road Builders' Assn., World Center Bldg., Washington 6, D. C., or from the Road Show publicity committee, 155 N. Wacker Dr., Chicago 6, Ill.

Canadian Firms Merge

Two well-known Canadian distributor organizations, Watson Jack & Co., Ltd. and F. H. Hopkins & Co., Ltd., have combined to form Watson Jack-Hopkins, Ltd. The new firm's main office will be located at 8500 Decarie Blvd., Montreal, Que., Branch offices are in Toronto, North Bay and Ottawa, Ont.

Both of the merged organizations are owned by B. J. Coglin, Ltd., Montreal. The new firm will continue to offer the same construction, railroad, municipal and industrial equipment lines handled before the merger.

New officers of the company are F. O. Peterson, president; S. H. Dobell, vice president; S. A. Stephens, Jr., vice president; M. F. MacDonald, vice president and Ontario divisional manager; G. I. Shaw, secretary; K. Patchett, treasurer.

CIMA Re-elects Lindsay

The Construction Industry Manufacturers Assn. has re-elected as president Kenneth Lindsay, Iowa Mfg. Co., Cedar Rapids, Iowa, at the association's annual meeting in Miami Beach, Fla. CIMA held the session in conjunction with the annual meeting of the American Road Builders' Association. Selected as vice presidents were Frank J. Whelan, Worthington Corp., Harrison, N. J., and Clarence E. Killebrew, Construction Machinery Div., Clark Equipment Co., Benton Harbor, Mich.

William A. Nugent, Thor Power Tool Co., Aurora, Ill., was renamed secretary-treasurer.

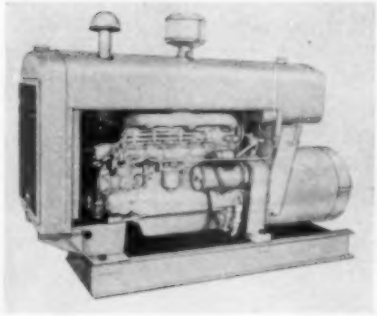
Ebasco Appoints Reece

K. W. Reece has been appointed executive vice president of Ebasco Service, Inc. Reece formerly was vice-president in charge of engineering and construction and was in charge of supervision of Ebasco's appraisal, engineering, construction, purchasing and inspection work. He is a member of the American Society of Civil Engineers and the Technical Valuation Society of New York.

Equipment distributors of Mexico staged a construction machinery exposition in Mexico City late last year. An unusual exhibit was 27-year-old Bucyrus-Erie B-2 pile driver (background) still in service for the firm of Ingenieros Civiles Asociados.

Equipment You Ought to Know About

Lightweight Generators



Manufacturer: Universal Motor Co., 540 Universal Dr., Oshkosh, Wis.

Claims: A new series of lightweight, large-capacity generating sets has been introduced by Universal.

The new models are powered by four-cycle full diesel engines of six cylinders and are directly coupled to generators turning at 1,800 rpm.

The new series is a companion to the recently announced Universal line of diesel generators offered in 1,200-rpm speed. The new 1,800-rpm models are produced in 10, 15, 25 and 35 KW and can be furnished with various controls to meet every job requirement.

New Cat Traxcavator

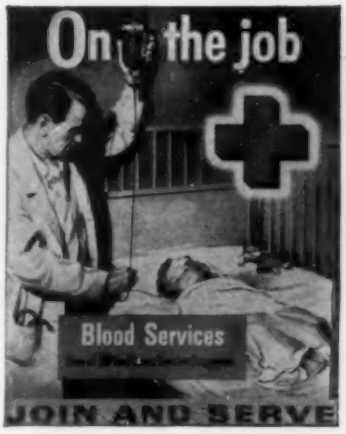
Manufacturer: Caterpillar Tractor Co., Peoria, Ill.

Claims: Caterpillar's new No. 977 Traxcavator, largest model in the Cat line of tractor-shovels, incorporates all of the design features that are in No. 933 and No. 955 Traxcavators. These features include unit design, 40° bucket tip-back at ground level, good horsepower-to-weight ratio, advanced hydraulic system, large lifting capacity, good balance and stability, improved operator convenience and visibility, fast response to controls, in-seat starting and oil flywheel clutch.

Utilizing a 2¼-yd. bucket, the No. 977 features a differential lever on each of the lift arms which makes possible the 40° bucket tipback at ground level. This feature allows the bucket to retain heaped loads even in loose materials. The bucket can be driven into a stockpile, tipped back and a full load obtained in one pass without declutching. Horizontal tractor push and upward hydraulic thrust can be accomplished simultaneously for better breakout action.

The bucket can be alternately tipped and leveled while pushing to help work its way into the material. Heaped loads can be obtained at the ground line. The tip-back action also improves stability since the center of gravity of the loaded bucket moves back towards the tractor as the bucket is tipped back. The ability to carry the load in a low position keeps the center of gravity closer to the tractor.

In addition to an automatic kickout on the lift valve, the No. 977 has an automatic bucket positioner on the bucket tip valve. This device allows the operator to move the lever into tip-back position and then release it. The lever will automatically move to "hold" position when the bucket reaches digging position and, in the meantime, the operator's hands are free to work gear shift and steering controls. This positioner is adjustable to give any desired bucket



"Believe me, this job can get awful boring."

digging angle. These two automatic kickouts were designed to provide decreased cycle time.

The hydraulic oil filter on the No. 977 is mounted on the left fender for easy access, while the hydraulic valve and tank are fastened to the right fender. Hydraulic cylinders are located above the tracks to minimize possibility of damage from mud and rocks. The tilt cylinders are placed low to provide good operator visibility.

Long track roller frames are used to provide good stability and low ground pressures, while three-bar grouser track shoes supply ample traction for shovel usage. Excellent operator visibility on the No. 977 is achieved by providing a high seat location and keeping the tilt cylinders at a low level.

Unobstructed inside surface of the bucket results in good cleaning characteristics. The spill plate is of double thickness and extends high up for spillage protection. The replaceable cutting edge is of hardened steel and the bucket contour offers a flat bottom section for easy penetration and loading.

Diesel engine and gasoline starting engine are started from the operator's seat with all controls readily accessible. A single-lever starting engine clutch and pinion control is standard equipment as is a 6-volt starting system for the starting engine. Twenty-four volt direct electric starting is also available as an attachment. A 60-gallon fuel tank is used and batteries for either 6 or 24-volt starting systems are located beneath the fuel tank at the rear of the Traxcavator.

The No. 977 is equipped with an oil-type flywheel clutch. This exclusive feature provides a clutch that seldom requires adjustment, has an extremely long life and decreases flywheel clutch lever pull, according to the manufacturer. It may be removed without disturbing the engine or transmission. Forward speeds up to 651 fpm and reverse speeds up to 616 fpm can be obtained. The overall dimensions of this 100-hp Traxcavator model are: 17 ft. ½- in. length; 8 ft. width; 7 ft. 3¼ -in. height; 1 ft. 4½ -in. ground clearance.

Powermatic Transmission

Manufacturer: Allison Div., General Motors Corp., Indianapolis, Ind.

Claims: The first automatic transmission to be designed specifically for highway trucks is now in production at Allison. Designed and developed by Allison in co-operation with the Chevrolet Motor Div., the new transmission is known as the CTP-4 Powermatic and is scheduled for service in a forthcoming line of Chevrolet trucks, according to the manufacturer.

Fully automatic, the CTP-4 is self contained in one package and features a torque converter-type, full power shifting, heavy-duty transmission with six speeds forward and one reverse, plus an integral hydraulic retarder for braking action. Controlled entirely by oil, the retarder relieves the service brakes from long downhill duty and controls the descent of the truck. It will not wear out and long grade descents are made faster and without danger of overheating the service brakes, it is claimed. The retarder provides the operator with a braking force approximately six times greater than that by engine braking.

Operation of the new CTP-4 is described as similar to the Powerglide in Chevrolet passenger cars. The torque converter contains four elements and operates as a hydraulic torque multiplier and a fluid coupling.

Rotary Air Compressor

Manufacturer: Jaeger Machine Co., Columbus 16, Ohio.

Claims: Conforming to the new standard series of air compressor sizes which Jaeger adopted in 1948, the new Jaeger Roto Air Plus model has a 365 cfm capacity instead of the conventional 315 cfm. This larger capacity is useful for gunite work and heavy duty sand blasting, or for operating a heavy duty wagon drill and a hand-held rock drill

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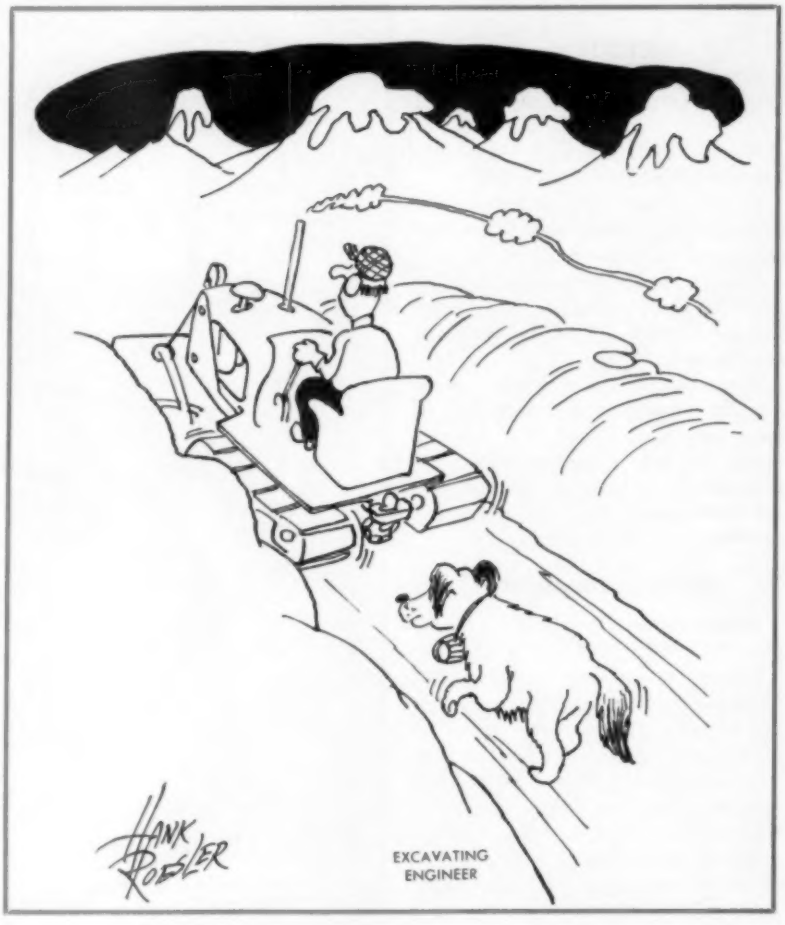


Allis-Chalmers

model D

THE LOW-COST MOTOR GRADER THAT OFFERS

more of everything...

more PRODUCTION-BOOSTING FEATURES

Choice of Allis-Chalmers engines

GASOLINE — 50 brake hp. Bare grader weight —8,800 lb. Four forward speeds to 25.6 mph, one reverse to 3.3 mph.

DIESEL — 50 brake hp. Bare grader weight — 9,350 lb. Four forward speeds to 25.2 mph, one reverse to 3.2 mph.

ROLL-AWAY moldboard rolls the load instead of pushing it, moves more dirt, uses less power.

Plus one-piece tubular frame, tandem drive, real operator comfort, hydraulic blade lift.

USEFUL OPTIONAL FEATURES

Power circle turn for faster, easier, better control of blade . . . turns 135 degrees.

Leaning front wheels with heavy-duty axle, for better control in close quarter-work.

Hydraulically shiftable moldboard to speed work around obstructions. Shifts 16 in. each way.

Special large tires for added traction, long wear. Front (7.50-20 or 8.25-20) and rear (8.25-20).

more JOB-MULTIPLYING ATTACHMENTS

Hydraulic scarifier, mounted amidships for maximum effective ground pressure.

Shoulder maintainer for safe, one-pass operation. Also available: one-pass windrow eliminator.

Rear-mounted 5/8-yd loader for fast, low-cost handling of materials.

plus snowplows, completely enclosed standup cab, hydraulically operated mower.

more SATISFIED USERS

Since its introduction in 1949, thousands of satisfied owners have *proved* the usefulness and low-cost versatility of the Model D on all kinds of construction and maintenance.

Call your Allis-Chalmers Construction Machinery Dealer for a demonstration today!

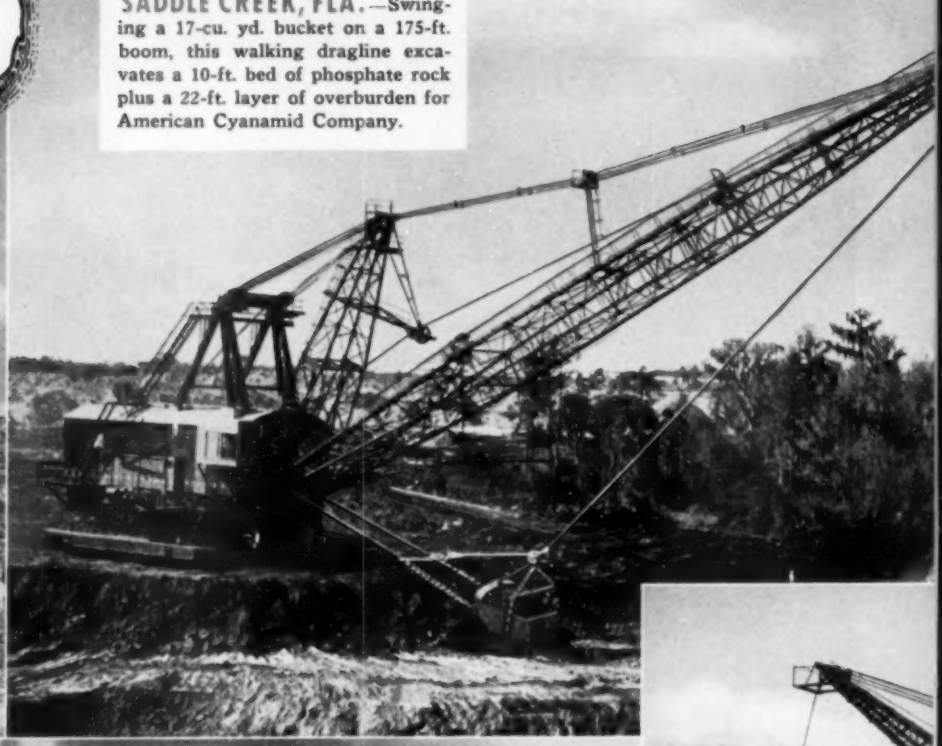
ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION
MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS

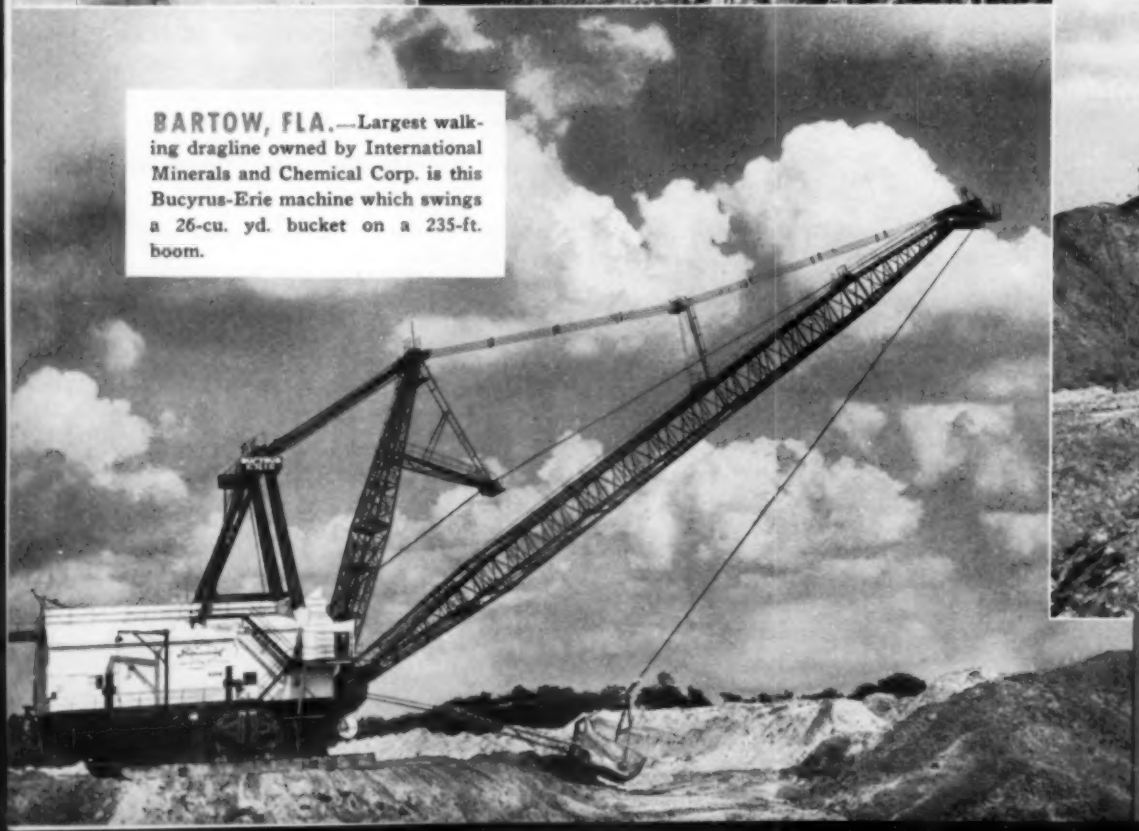
ROLL-AWAY is an Allis-Chalmers trademark.

Bucyrus-Erie Walking Draglines . .

HOMELAND, FLA.—The Virginia-Carolina Chemical Corp. uses this machine to strip overburden and mine phosphate matrix. Its 175-ft. boom carries a 17-cu. yd. bucket.



SADDLE CREEK, FLA.—Swinging a 17-cu. yd. bucket on a 175-ft. boom, this walking dragline excavates a 10-ft. bed of phosphate rock plus a 22-ft. layer of overburden for American Cyanamid Company.



BARTOW, FLA.—Largest walking dragline owned by International Minerals and Chemical Corp. is this Bucyrus-Erie machine which swings a 26-cu. yd. bucket on a 235-ft. boom.

... BIG PRODUCERS

For Florida Phosphate Mines

IN the phosphate fields of Florida big Bucyrus-Erie walking draglines handling multi-million-yard phosphate mining work are a familiar sight.

Phosphate producers in this area have learned from long experience that these machines are a key to steady high output and low costs. Outstanding performance features are the simple walking mechanism that makes move-ups smooth and accurate . . . the strong, lightweight front end that eliminates deadweight, lets power work swinging payloads . . . and responsive Ward Leonard control with quick acceleration and deceleration of swing.

If your operations require big-capacity, economical stripping, let us give you complete information on Bucyrus-Erie walking draglines — in capacities from 4 to 30 cu. yd.

77156C

BARTOW, FLA.— This walking dragline, with a 6-cu. yd. bucket and 120-ft. boom, constructs a settling basin for the Armour Fertilizer Works.

PIERCE, FLA.— A "walker," with a 17-cu. yd. bucket on a 175-ft. boom, dumps a load of phosphate ore in the sump pit at the mines of The American Agricultural and Chemical Company.

BUCYRUS ERIE

South Milwaukee, Wisconsin

75 Years of Service to Men Who Shape the Earth

New Equipment . . .

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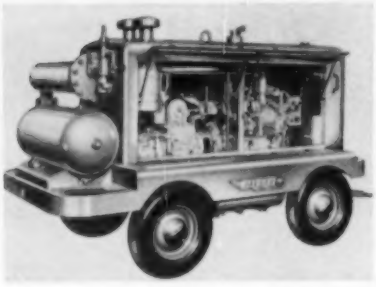


simultaneously, according to the manufacturer. The new model, like other Jaeger rotaries, features slow speed operation. Instead of the usual 1,800 rpm, its full load speed is 1,700 rpm. At this speed its Model 4-71 General Motors diesel engine operates with ample reserve power.

Instant-acting controls, with continuous, stepless regulation of engine speed to air demands, maintain 100 psi minimum air pressure under all normal working conditions. Two-stage compression and tube finned multi-pass oil cooler result in air temperatures at the manifold 100° cooler than in the most efficient reciprocating compressors, it is claimed. Eight-hour fuel tank, adjustable radiator shutter, wrap-around bumpers and automotive-type steering front axle are standard equipment features. Descriptive literature is available.

LeTourneau-Westinghouse Elegrader

Manufacturer: LeTourneau-Westinghouse Co., Peoria, Ill.

Claims: LeTourneau-Westinghouse has added the Reisser Elegrader, a motor grader attachment, to its line of earthmoving equipment. LeTourneau-Westinghouse agreed to purchase the entire output of Elegraders from the Reisser Corp., Blair, Nebr.

The Elegrader transforms the standard, one-man-operated motor grader into an all purpose tool for loading, casting, terracing, ditching, widening and stripping.

Engineered and built for use with the Model 550, 610 and 660 motor graders manufactured by the Adams Div. of LeTourneau-Westinghouse, the Elegrader also has been adapted for attachment to the Caterpillar No. 12 grader.

When mounted on the Adams 660 grader, the Elegrader will handle up to 1,500 cubic yards of material per hour on side-casting assignments. The 22-ft. carrier length Elegrader will load trucks or other hauling units at a 12-yd. per minute clip. The new 27-ft. Elegrader will overcast the loading production 20% over the 22-ft. carrier length because the carrier is pitched at a less inclined angle.

Company engineers attribute this greater production to: Maximum use of the motor grader's horse power; the efficient plowing action of material onto the conveyor belt; the efficient troughing belt conveyor; and faster conveyor belt speed.

The trough-shaped conveyor, which comes in 16, 19, 22 and 27 ft. lengths, carries approximately 30% more material than a flat belt of the same width, says LeTourneau-Westinghouse. In the

process, the conveyor centers the material to provide better traction on the belt and better belt control.

The belt's high travel speed delivers the material with an ejection effect, throwing it in a stream which shoots clear of the end of the conveyor.

A single basic unit is used for all sizes of the Elegrader. The new 27-ft. model, with its tandem wheel outrigger, is basically a standard 16-ft. carrier with an 11-ft. extension, plus the outrigger frame and wheels. By adding or subtracting extensions, any model can be converted into a 16, 19, 22 or 27-ft. conveyor length.

Mobility is achieved by a mechanism which allows the carrier to be raised to a perpendicular position for traveling from job to job. This feature is employed on all but the 27-ft. model. For roading, the 27-ft. model is removed from work position on the grader. Its tandem outrigger wheels are turned and pinned. Then, the unit is attached to the rear of the grader in a trailing position.

In addition to scrapers and brush guards, which dislodge foreign matter from the Elegrader's return belt rollers, there is an extended lower lip at the feed end of the conveyor. This lip protects the belt from damage by objects entering the conveyor and prevents the plow disc from coming in contact with the belt. The return belt travels within the enclosure of the carrier frame. A 3-point "tripod suspension" of the carrier prevents the conveyor from twisting.

Installation of the Elegrader requires no cutting or welding and involves the drilling of five holes. Of the four controls needed to operate the Elegrader, three make use of the grader's standard control equipment. The only additional lever added is the belt clutch control. Permanent sealed bearings are used on carrier rollers.

Four-Way Skid-Shovel

Manufacturer: Drott Mfg. Co., Milwaukee, Wis.

Claims: Drott has introduced a new 2¼-cu. yd. "four-in-one" Skid-Shovel as a companion tool for the 75-hp International TD-14 crawler tractor.

The hydraulically-operated unit can be converted instantly from Skid-Shovel to either bullclam, clamshell or bulldozer by flicking a small lever located within easy reach of the operator.

The basic "four-in-one" attachment was job-tested in the field for two years on the International TD-6 and TD-9 models.

Drott says that the reason behind the unique design of the "four-in-one" attachment is that the average owner of a shovel-loader frequently needs some bulldozing or close-controlled stripping or grading in his operation.

When operated as a Skid-Shovel, the new unit gives a pry-over-shoe breakout action of over 17,000 pounds, plus a 42° ground-level bucket roll-back. It will dump with a 9-ft. clearance.

For use as a bulldozer, the 94-in. blade has a cutting edge and shoes that ride on the ground, giving a skidding action. The depth of cut is regulated by a hydraulic radius control, or forward and backward pitch of the blade, rather than by the lifting and lowering of push-

Continued on page 54

This rope can take it!

MONARCH WHYTE STRAND WIRE ROPE BY MACWHYTE

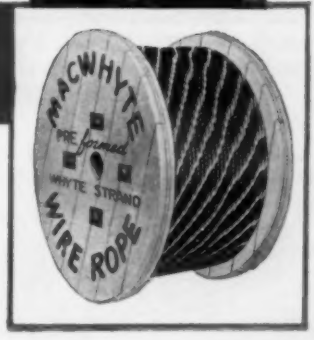
Wherever you put wire rope to work, you need rope designed and made to earn its way on your toughest requirements, under severest service conditions.

To provide you with exactly the *right* rope for each requirement, MONARCH WHYTE STRAND is made in every wire rope classification, PREformed and Internally Lubricated, Lang Lay or Regular Lay, with Fiber Core or Independent Wire Rope Core.

Put MONARCH WHYTE STRAND to the test on your equipment, you will be more than pleased with its performance.

Prices, literature, and catalog available through any Macwhyte distributor; or write direct. Ask for Special recommendations Booklet 5325.

MACWHYTE WIRE ROPE



Macwhyte Company, 2903 Fourteenth Avenue, Kenosha, Wisconsin

Ask for MONARCH WHYTE STRAND Bulletin 5425

Manufacturers of: Internally Lubricated PREformed Wire Rope, Braided Wire Rope Slings, Aircraft Cables and Assemblies, Monel Metal, Stainless Steel Wire Rope, and Wire Rope Assemblies.

MILL DEPOTS:

New York 4, 35 Water St.
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San Francisco 7, 188 King St.
Los Angeles 21, 2035 Sacramento

Distributors conveniently located throughout the United States

Continued from page 52

beams. The radius control is so sensitive that cuts can be made in 1-in. increments.

Operating as a bullclam, the clam becomes a depth gauge. As the bullclam is pushed ahead, material boils into it and fills to a heaping load with a minimum of power and stress on the tractor. When a load is obtained, the operator closes the clam, tips back the bucket on the skid-shoes and skids the load along the ground.

Opening the bullclam wide makes it possible to operate the "four-in-one" as a clamshell. The open clam is brought down into the material and closed by hydraulic power, filling as it closes. On clamshell operation, the rig gives a 30-in. dumping height over ordinary roll-forward bucket dumping—11 ft. in all for loading into hauling units.

The Hydro-Spring also is incorporated in the TD-14. The Hydro-Spring is a hydraulic cylinder enclosed in a coil spring and connected to the part of the hydraulic system supplying oil to the lifting side of the main lift cylinders. This unit absorbs the rough shock loads usually associated with front-end loaders.

Athey-Cat Dump

Manufacturer: Athey Products Corp., Chicago, Ill.

Claims: Athey is producing a new Athey PR 15-Cat DW15 rear dump trailer. The PR 15 has a capacity of 15.6 cubic yards, speeds up to 31.3 mph, right or left angle turns of 90° and 3-stage hydraulic hoists which tilt the body 60°.

The entire loaded unit weighs 84,683 pounds with 37% of the load on big drive wheels of the 186-hp Cat tractor. Engine, tractor, trailer and tires are matched in design.

The all-welded body is built to handle rock or any other material. The ⅛-in. side plates are of premium high-tensile steel. The bottom is of ½-in. steel over 1¾-in. solid oak plank filler over $\frac{5}{16}$-in. lower plate. The body is completely reinforced with box sections.

Dumping can be accomplished while the unit is moving. The discharge lip extends well beyond the rear wheels to dump the load over the edge of the fill. Four-wheel, air-actuated brakes for tractor wheels and trailer wheels can be set individually, depending upon footing at the fill.

The large, single tires are interchangeable with tractor driver and trailer. Size 21:00-25, 24-ply rock-type tires provide flotation and traction for work in soft ground. The wheels are equipped with tapered roller bearings to take radial and thrust loads.

Rolling Rubber Tanker

Manufacturer: Goodyear Tire & Rubber Co., Akron, Ohio.

Claims: A watermelon-shaped rubber tank for the bulk transportation and storage of fuels and other liquids has been developed by Goodyear's Aviation Products Div.

Called the Rolli-Tanker, the container can be rolled over ground, floated in water and dropped without bursting.

Rolli-Tankers are unconventionally shaped tires of nylon cord and tread stock construction with fuel-proof inner lining. They can be built in a range of sizes. To date, Goodyear has tested 3½ x 5-ft. tanks that weigh 40 pounds deflated and give the appearance of oversized watermelons when loaded to 250-gallon capacity.

Mounted on hubs and axles to permit easy handling, Rolli-Tankers may be towed manually or by vehicle. The containers have excellent flotation characteristics because of extremely low groundbearing pressure. Only 30 pounds of drawbar pull—easily supplied by one man — are needed to roll the storage units.

Filled Rolli-Tankers can be towed either singly or in tandem arrangements behind any vehicle equipped with a trailer hitch without affecting the vehicle's gross weight. Low footprint pressures permit them to be drawn easily over unprepared surfaces, such as rocky, uneven terrain, swampy soil and sandy areas. The pliable construction of the tankers conforms to the shape of obstacles over which they pass.

Rolli-Tankers have a natural buoyancy, too, and can be floated down rivers and across lakes when filled properly.

During recent tests, fully loaded tanks were dropped 15 feet without bursting, giving preliminary indication that Rolli-Tankers may be suitable for parachute or free fall droppable containers.

Redesigned Pioneer Plant

Manufacturer: Pioneer Engineering Works, Inc., 1515 Central Ave., Minneapolis 13, Minn.

Claims: Pioneer has announced a redesigned and field-tested version of its Model 102 continuous mix bituminous plant.

The unit features a greater adapability to varied types of jobs primarily because of a four-compartment bin, Pioneer says. This bin allows a greater latitude of, and flexibility in, composition of aggregate fed to the mixer.

On jobs where less than four sizes of aggregate are sufficient, the four-compartment bin easily can be converted to production of whatever fewer sizes are needed. Unusually large proportions of any particular size can be attained by combining compartments.

Production capacity of the Model 102 ranges up to 200 tons per hour, depending on material conditions. It has two main units—a combination drier-dust collector and a combination gradation-mixer. Each is compactly assembled in a straight line on a single chassis.

Standard auxiliary units include a cold aggregate feeder, a hydraulic-cradle-mounted conveyor which delivers aggregate to the drier, a bucket elevator which transfers material from the drier to the gradation mixing unit, a truck-mounted combustion chamber and a

Continued on page 56

How L.G. Arnold, Inc.

licks spongy haul road, 20% grades

On regrading 12½ miles of Wisconsin Highway 95, from Blair to Hixton, L. G. Arnold, Inc., of Eau Claire, Wis., found Tournapulls a big help in licking a tough hauling problem. Their job was to widen grade from 20′ with 4′ shoulders to 22′ with 8′ shoulders. It also involved raising the road 2 to 4 ft., including a 15″ sand lift. The other material handled was clay and shale mixed and silty sand.

Three miles of this 612,000-yd. job lay in a swampy area where bubbling springs made road soft and spongy. 3 weeks of rain, after starting the job, made spongy conditions worse.

Equipment used on this project included 7 new C Tournapulls, 3 Super "C's", 6 crawler-scraper units, 10 crawlers for pushing and dozing, 1 rooter, and 2 motor patrols.

7 loads per hour on 6000′ cycle

On a long haul from borrow pit, over a typical 6000′ cycle, each of six Tournapulls on this operation averaged 8.3 min. per trip, 7 trips per hr. Contractor estimated the 6 "C's" averaged 20,000 yds. in a 50 hr. wk. The soft haul road had a 20% grade from highway to borrow pit. Rigs traveled in 2nd gear most of haul distance.

3-mile one-way haul to build 15″ sand lift

Later, the Tournapulls were used to haul the 15″ sand lift on hauls ranging up to 3 miles one way. On the long operation, rolling resistance on the sandy, clayed-loam road was as high as 250 to 300 lbs. per ton. "C's" were equipped with sideboards and 24:00 x 25 tires. These large tires, with 45 lbs. pressure, made it possible for rigs to go through spongy sections in the new grade, trip after trip, without damage to the soft sub-grade.

This time study was taken on the sand lift operation while the 7 "C's" worked a 5.2-mile cycle:

Time in Borrow Pit (2000′ from haul road)	6.7 min.
Travel 10,000 ft. @ 16.2 mph avg.	7.0 min.
Travel 2,000 ft. @ 8.0 mph avg.	2.9 min.
Return 11,000 ft. @ 16.4 mph avg.	7.7 min.
Return 1,000 ft. @ 8.0 mph avg.	1.4 min.
Total cycle time	25.7 min.

Each machine averaged 14 yds. per load. On this 5.2-mi. swing the 7 "C's" totaled 1900 yds. per 10-hr. day.

"Sure-footed in wet going"

Performance of the C Tournapulls was praised highly by the men on the job. Said Phil Dudenhoefer, Grade Superintendent, "I like the sure-footedness of the C Tournapulls in wet and slippery going." On the grading operation, Ralph Ring, Master Mechanic, said, "Tournapulls unloaded by themselves while other units had to be pushed to unload."

Commenting on the sand lift operation, Norman Hulett, Superintendent, had this to say: "Tournapull is the most sure-footed piece of equipment I've ever seen on rubber. I never figured I'd see rubber tires go where these can go."

You, too, need speed and versatility to meet your dirtmoving problems, on long hauls, short hauls, in bad weather, spongy footing, and other adverse conditions. Check Tournapulls for the answer. Write or phone your LeTourneau-Westinghouse Distributor for a demonstration on your job. He will be glad to show you how to get lowest-net-cost-per-yard with Tournapulls.

Tournapull—Trademark Reg. U.S. Pat. Off. P-905-H-b

C Tournapull loads clay and shale for 3000-ft. haul to roadway seen in distance. Occasional slabs of shale made loading difficult. Avg. load time was 65 sec. over 90-100 ft.

Spongy, soft condition of roadway is shown. On the 12½-mile job, 9000 ft. of drainage pipe and 7 bridge structures will be installed.

Loading sand for sand lift, "C's" "float" over soft footing with big 24:00 x 25 tires.

LeTourneau-WESTINGHOUSE Company

Peoria, Illinois

A Subsidiary of Westinghouse Air Brake Company

New Equipment . . .

Continued from page 54

diesel generator set. All auxiliary units except the generator set and the cold aggregate feeder are mounted on a rubber-tired chassis for towing in line behind the two main units.

To accomplish the four-way separation of material size, the vibrating screen of the Model 102 has 3½ decks instead of 2½. The welded steel bin has a capacity of approximately 20 cubic yards—8 yards for fines and 4 yards each in compartments for intermediate, coarse and extra coarse materials.

All compartments are equipped with overflow spouts, calibrated gates and automatic electric low and high material level indicators which operate warning lights on the control panel. The apron feeder has been increased in length to six feet. A sampling device permits simple and accurate tests of material proportions.

Other improvements in the Model 102 include:

A totally enclosed belt-type fines return conveyor from the drier-dust collector unit, replacing a screw type conveyor; a built-in reject spout to waste fines whenever and to whatever degree desired; a redesigned hot elevator, of steel channel frame and two feet longer to accommodate the larger screen; greater clearance between the center-line of the truck-loading hopper and the back of the mixer unit to allow use of wider trucks; clearance of 76 inches from the fifth wheel pin on both main units to allow use of large tandem truck-tractors in travel; a wider range of selection of burners with increased heating and drying capacity; and, as optional equipment, a new 400 gallon capacity bitumen tank and a larger fines feeder having a lower loading point.

"Another one of those talks at the summit."

Portable Batching Bins

Manufacturer: Erie Strayer Co., Erie, Pa.

Claims: Truck clearance width has been made greater by from two to four feet in the new Erie PC-series portable batching bins announced by Erie Strayer.

The new model has an additional 30 to 40 square feet of platform space. The checkered steel deck plate offers greater safety under foot.

The wider spread between columns adds stability to the entire structure. The new bins can be arranged for aggregate only, or for aggregate and cement, as well as with additional ground storage facilities.

The PC-series portable bins are of the welded sectional type for easy set-up and take-down. Bins are made in two and three sections with two-piece platforms. Detachable columns and braces further reduce space requirements for transportation and storage.

The top section of all compartments is in one piece. Cement compartments are weather-tight.

Improved Oliver Crawler

Manufacturer: The Oliver Corp., 400 W. Madison St., Chicago 6, Ill.

Claims: Oliver has announced an improved Model OC-18 crawler tractor. The OC-18 is powered by an Oliver full diesel engine delivering 161 hp. The crawler weighs 32,500 pounds and

Continued on page 58

Ride the new "660"

150 hp...8 forward speeds...does more work in less time!

The best way to judge a horse . . . or a car . . . or a grader, is to ride it. Get behind the wheel of a modern Adams "660" and see for yourself!

You'll find the big diesel engine starts readily in any kind of weather. Convenient and positive-acting power-controls raise, lower, revolve, or extend the 12-ft. blade to any desired position.

Pull the throttle and feel the surge of power. Set the blade for a deep cut, then watch the dirt boil over-and-out as the big tires take hold, and see how the machine hangs on to occasional over-loads. Note how Adams constant-mesh transmission provides easy gear shifting with no clash of spur gears.

Flexible speed range means more work per day

Eight forward speeds (1.4 to 25 mph) provide the necessary wide speed range to handle all operations at the fastest practical rate. Three additional "creeper speeds" (.23 to 1.82 mph) are optional. These "slow motion" speeds *gear* the grader to extra-low speeds — no need to slip the clutch. Make it easy to rip up rocky and rooty terrain with less shock to the grader. Creeper speeds are important, also, for accurate finishing in tight places. *No other grader offers this wide range of eleven forward operating speeds.* They mean *more* and better work done, in *less* time, also mean a big saving in downtime and maintenance.

4 Reverse speeds (1.8 to 13 mph)

This wide range of backing speeds saves time on every cycle. You can back at 13 mph for a second cut. Or you have a good range of working speeds for grading or mixing on the reverse part of the cycle. This reverse range provides extra safety, extra accuracy for maneuvering.

Applying double-action hydraulic brakes to wheels also brakes transmission . . . gives greater safety in quick, sure stops, with less pedal action, less strain on machine.

Leaning front wheels balance the pull of the blade, give more accurate control on slopes, reduce stress, make steering easier, safer.

Engine rubber-mounted. No engine vibration is transmitted to grader to annoy and fatigue the operator. Means better operator satisfaction and efficiency.

See the "660" ADAMS before you buy any grader

Judge your next motor grader on the basis of *performance*. Ask your LeTourneau-Westinghouse Distributor to show you a "660" in action. Ride one of these machines. Find out for yourself why Adams motor graders do *more* work, in *less* time, at *lowest* cost.

Equipped with dozer-blade, Adams grader backfills, dozes trees and stumps, push-loads scrapers, moves debris off right-of-way, fills in around culverts, and does "handy-man" jobs usually assigned to special tools. With V-type snow-plow "660" can buck heavy drifts.

Operator on any Adams grader can move blade from ditch to bank-cutting position in less than a minute. Horizontally he can reach up to 7½' outside the wheels. Blade is fully reversible . . . note high 28" clearance under front-axle for straddling high windrows.

A size ADAMS for every need

Model 660 — 150 hp diesel, 27,730 lbs. A big grader for big jobs—high production on construction work.

Model 550 — 123 hp diesel, 23,500 lbs. Heavy-duty, all-purpose machine, outworks anything in its class.

Model 440 — 104 hp diesel, 21,500 lbs. A good producer on all average grading and maintenance work.

Model 330 — 80 hp diesel, 20,500 lbs. A good general-purpose machine with surprising capacity.

TraveLoader — high-speed, heavy-duty, self-propelled, belt-type loader. Loads trucks from windrows or stockpiles.

AG-3-G-b

LeTourneau-WESTINGHOUSE Company

Peoria, Illinois

A Subsidiary of Westinghouse Air Brake Company

New Equipment . . .

Continued from page 56

mounts a full line of matched allied equipment.

The OC-18 has Oliver's Power-Turn steering which permits operators to make spot turns or gradual turns of any angle. Without shifting, the operator can decrease speed by 38% with an increase in drawbar pull or push of up to 60%, depending on weight and traction.

In answer to the operator's demands, the machine instantly responds by changing from direct drive to planetary reduction drive with a reduction in speed and a corresponding increase in drawbar pull. Releasing the levers returns the tractor automatically to its original transmission setting.

The controls have been regrouped for easy, simultaneous handling of more than one lever by the operator. Four levers provide full maneuverability. The two inside levers are for Power-Turn's planetary reduction drive. The outside levers are for spot turns. There is both hand and foot positive braking.

Oliver announces that improvements have been made to the heavy-duty track frame and tracks. A more rugged and efficient transmission is used. A Hi-Life wheel system featuring anti-friction bearings is also available.

Cleveland Backfillers

Manufacturer: The Cleveland Trencher Co., 20100 St. Clair Ave., Cleveland, Ohio.

Claims: A wider backfiller has replaced the original Cleveland Model 80. Although the new Model 80W is heavier than the original machine, its ground bearing pressure has been reduced from 7.2 to 4.5 psi. Lower ground bearing pressure was obtained by increasing the machine's over-all width and equipping it with 16-in. wide crawler pads instead of 10-in. pads. Side crane capacity of the unit has been increased to 25,000 foot-pounds. A tamper unit with a 2-ft. boom extension for tamping wide trenches is available. Electric starting of the tamper unit from the operator's seat is provided.

Power has been substantially increased on the Model 190 Cleveland backfiller. The machine is now driven by a diesel engine developing 93.5 hp at 1,500 rpm governed speed. Backfill clutch lever linkages have been improved, permitting easier, more accurate control of the backfill board. Refinements in the backfill winch clutches provide more rapid dissipation of heat, resulting in smoother clutch action and an increase in the wear life of the clutch linings. Special spacer washers have been added to the track adjusting bolts for greater maintenance-free track life. Over-all height of the Model 190 has been reduced to simplify transport.

75-in. CMC Mixer

Manufacturer: Construction Machinery Co., Waterloo, Iowa.

Claims: CMC announces the first of its 1956 Transcrete truck mixers, the Model 700, which has a 75-in. diameter drum and a 16° slope.

CMC says that the Model 700 will haul up to 8-plus yard loads. It has the CMC floating drive, outswinging hopper, heavy alloy steel drum and reinforced drum head construction.

Motor Graders

Manufacturer: Huber-Warco Co., Marion, Ohio.

Claims: Two new motor graders featuring a torque converter and full power shift transmission have been announced by Huber-Warco. They are the 140-hp Model 7-D and the 100-hp Model 6-D.

The combination of a converter and full power shift transmission brings more usable power, increased ease of operation and positive protection for all

machinery, according to the manufacturer. The combination also provides greater variations in torque output with only four forward and four reverse speeds.

Standard on both grader models is a power sliding moldboard, operated hydraulically from the cab. It allows an operator to power-shift the moldboard out of the way as he approaches a culvert or post and then power-shift it back to its exact former position. The operator can attain a high bank-sloping angle up to 90° on either side without leaving the cab. The blade can be rotated 180° without removing the scarifier teeth.

Model 7-D is equipped with 14.00 x 24 10-ply tires, and the 6-D with 13.00 x 24 8-ply tires.

Portable Radiophones

Manufacturer: Motorola Corp., Chicago, Ill.

Claims: A new line of transistorized portable two-way Handie-Talkie radiophones, delivering up to 20 times the radio frequency power output conventionally attained in such equipment, has been announced by Motorola's Communications and Electronics Div. Chiefly responsible for this unprecedented power output capability and trebled receiver audio output are several recent advances in the development of transistors, plated circuitry and lightweight, long-life power packs.

The complete line includes model RF

Continued on page 60

"FORD POWER STARTS QUICKLY

hangs on to heavy loads — doesn't hesitate a bit!"

says FREDERICK VOLK, Fox Point, Wis.

"We handled approximately 60 cubic yards in close quarters with the clam shell in about three hours work. We were digging a drainage trench for a 42" culvert and had to go around various obstacles including trees and a 12-ft. fence to swing the clam over with the load. I like the Ford power of this Hydrocrane because it starts quickly—hangs on to heavy loads and it doesn't hesitate a bit!"

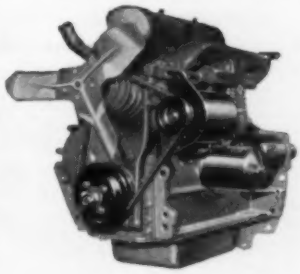
Ford
INDUSTRIAL ENGINES
AND POWER UNITS

The Bucyrus-Erie Model H 3 Hydrocrane that Mr. Volk operates for the village of Fox Point is powered by a Ford "172" industrial engine. Built for versatility, mobility and economy, the Hydrocrane gives precision control through a hydraulically operated closing bucket and a variety of attachments. Upper deck revolves 360° with telescoping high-lift boom capable of from 30- to 38-ft. full load length. Hoist rams provide free line speed of up to 190 f.p.m. with 6,000 lbs. line pull. Ford Industrial Engines can provide similar power plants for all the major types of construction equipment.

It will pay you to specify Ford engines on your next piece of equipment because Ford is the only industrial engine manufacturer to offer modern Short Stroke design in a *full line* of overhead-valve 4-, 6- and 8-cylinder engines. These engines cut piston travel and piston speed which reduce friction and wear. The result is more usable power and extended engine life. This means you get jobs done quicker and more economically.

Right down the line . . . from the 134- and 172-cu. in. 4-cylinder engines . . . to the powerful 6-cylinder 223-cu. in. engine . . . and the big heavy-duty V-8's of 272 and 332 cu. in. displacement, you'll find Ford engines are years ahead in engineering. Engines that are designed to give power-packed performance more economically and for a longer period of time.

FORD "172"



Autothermic pistons help maintain proper piston-to-wall clearance and prolong engine life.

Large overhead valves of high chrome-nickel alloy improve volumetric efficiency, resist warping.

Free-turn intake and exhaust valves reduce the possibility of valves sticking, help maintain compression longer.

Iron Alloy sleeves are centrifugally cast for better heat transfer and wear characteristics plus longer cylinder wall life.

For detailed information, phone or write today to:

INDUSTRIAL ENGINE DEPT., **FORD Division of FORD MOTOR COMPANY,** P.O. BOX 598, DEARBORN, MICH.

New Equipment . . .

Continued from page 58

power output ratings from 1 to 8 watts. Coincident with the increased power output is a decrease in weight and size of as much as 50%. All units are housed in sturdy, formed aluminum cases. The lightest and smallest model weighs only 7 pounds 9 ounces complete. A full 8-watts transmitter power output is realized from a model weighing only 15½ pounds. The extensive utilization of transistors, including use in transistorized power packs, also extends battery life for minimum operating costs.

Another feature of the equipment is the "snap-on" power pack. Dry cell, wet cell and 118 "VAC" power packs are interchangeable. The wet cell power pack employs new, lifetime, rechargeable nickel cadmium cells and includes the option of operation from 6 to 12-volt vehicular type batteries.

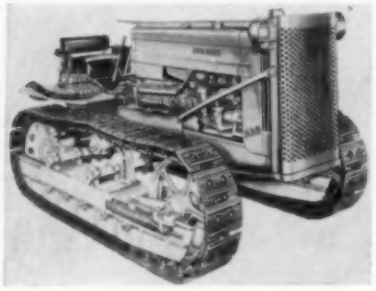
The new Handie-Talkie portable radio-phones employ transistors in an application where they can be readily used to advantage. The line includes models in the 25-54 megacycle and 144-174 megacycle frequency range in both handset type microphone and speaker-palm type microphone versions. Optional accessories provide for all types of operation in all services in these frequency ranges, including all users in the public safety, industrial and transportation categories. Descriptive literature is available.

Small Deere Tractors

Manufacturer: John Deere & Co., Moline, Ill.

Claims: Now in production by Deere is the 420 series tractor, both crawler and wheel types. The new tractors closely resemble the John Deere 40 series of tractors which they replace. The new 2-cylinder, valve-in-head engines, common to both models, deliver approximately 20% more power.

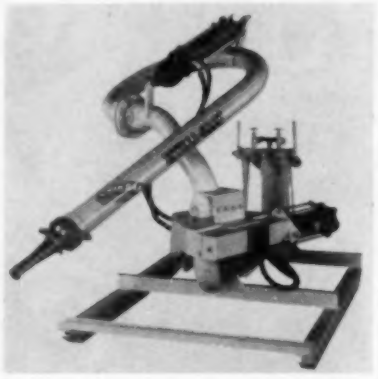
No official test has been made, but it is estimated that the increase will bring the tractors close to 30 belt hp. Drawbar horsepower is increased from 20 to approximately 25.



The additional power is attained primarily by changes in the bore, the cylinder head, valve mechanism, manifolding, carburetion and the new compression ratio of 7 to 1. A new pressurized cooling system with water pump and thermostat replaces the thermo-siphon system formerly used.

Features of the new 420 tractors include: low, compact, rugged construction; quick maneuverability; "live" hydraulic system and adaptability to a wide variety of work.

Hydraulic Water Monitor



Manufacturer: Chiksan Co., Brea, Calif.

Claims: The manufacturer has developed a hydraulic water monitor capable of throwing a 300-ft. stream through a 2½-in. nozzle tip at the rate of 2,000 gpm. The device is known as the Chiksan Intelli-Giant MH-4.

The monitor has a horizontal sweep of 270° and a vertical range of 120°. It operates with pressures ranging from 30 to 300 pounds. Hydraulic power is derived from the pressures of water diverted from the horizontal supply pipe near the intake. These pressures may be adjusted by control valves.

The second model of the Intelli-Giant series to be marketed, the MH-4, with its 4-in. supply pipe and 4-in. barrel is of lighter weight (650 lbs.) and of smaller dimension than its predecessor, the 6-in. Model MH-6.

For remote operation, the hydraulic controls may be removed to a location many feet distant from the monitor.

Horizontal and vertical movement is made possible with Chiksan swivel joints.

The Intelli-Giant is used in applications such as hydraulic mining, slurrying, overburden removal and compaction of earth-rock fills.

Davis Backhoe

Manufacturer: Mid-Western Industries, Inc., Wichita, Kan.

Claims: A new Davis backhoe that digs at right angles to either side of the tractor as well as to the rear has been introduced by the manufacturer. The right angle feature makes the unit ideal for cleaning and digging of roadside ditches, irrigation and drainage canals, for digging around the corner of a building and crowded areas where trees, boulders or buildings won't permit a standard backhoe to operate.

The backhoe is sold in combination with the Davis Loader and is mounted directly onto the loader frame. It uses the same pump as the Davis Loader and is hooked up to the hydraulic system with quick-couplers for fast removal. A selector valve lets the operator have immediate control of either the loader or the backhoe.

Even though it is possible to attach or detach the backhoe from the tractor in less than five minutes, the mounting system is such that the backhoe is held rigidly onto the tractor so that there is no sway or vibration when the unit is in the transport position. Individually controlled hydraulic stabilizer feet are on each side of the exceptionally wide frame so that the unit can be leveled up on slopes for digging plumb holes.

The unit is specially designed for operator comfort and has an extra large padded seat which revolves with the backhoe boom and dipper stick so that the operator is always facing the direc-

Continued on page 66

NEW!

a 900 cfm GYRO-FLO

HAS BEEN ADDED TO INGERSOLL-RAND'S

COMPLETE LINE OF PORTABLE ROTARY COMPRESSORS

Now there are 5 sizes . . . 125, 210, 315, 600 and 900 cfm.

There's only one GYRO-FLO . . . Ingersoll-Rand's Rotary Portable Compressor . . . Introduced in 1950

IN THIS new addition to the time-tested GYRO-FLO line, Ingersoll-Rand brings you a heavy-duty compressor that delivers a full 900 cfm at 100 psi — yet weighs only 14,340 pounds ready-to-go, and is but slightly larger than the famous GYRO-FLO 600.

The smooth, dependable and virtually maintenance-free performance of the GYRO-FLO rotary compressor is a matter of record on drilling and construction projects the world over. When you have a job calling for 900 cfm of air power, ask your Ingersoll-Rand representative to tell you more about this new, heavy-duty GYRO-FLO 900.

Ingersoll-Rand

2-357 ♥ 11 Broadway, New York 4, N. Y.

AN UNBEATABLE COMBINATION . . . GYRO-FLO COMPRESSORS AND I-R ROCK DRILLS

Why is P&H *of the*

MAGNETORQUE* and ELECTRONIC the only modern

These revolutionary advances in design and performance of electric shovels are just two of the reasons why operators and owners are pointing to P & H for their outstanding achievement in electric shovels . . . why P & H now is at the head of the Big Three . . . why P & H can promise you the only modern electric shovel.

Just think! Power transmission *without friction's* in massive electric shovels. Boosts efficiency. Cuts maintenance and operating costs. *This is Magnetorque.* Exclusive with P & H.

Just think! Complete control of dig, hoist, swing and propel of these giants with simple stepless control. 12% faster cycles; 16% savings in operating time. *This is Electronic Control.* Exclusive with P & H.

For complete information, call your P & H representative. Electric Shovel Division, Harnischfeger Corporation, Milwaukee 46, Wisconsin.

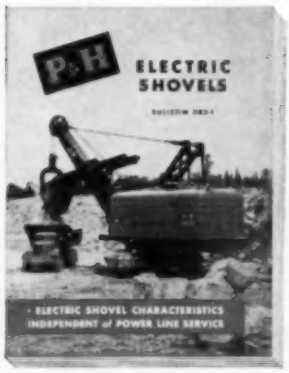
For Modern Engineering, Look to

HARNISCHFEGER

P&H ELECTRIC SHOVEL DIVISION

at the head Big Three?

CONTROLS give operators electric shovels

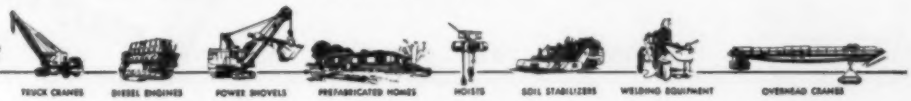


For a clearly illustrated description of Magnetorque* and how it sets a new standard for electric shovel design and operation, write for Bulletin X-156. Other booklets available on electric shovel models from 3 to 10 cu. yd. capacity. A copy of these publications will be sent those who request it on their company letterhead.

*T. M. of Harnischfeger Corp. for Electro Magnetic Type Coupling

CORPORATION *Milwaukee 46, Wisconsin*

the P&H *Line*



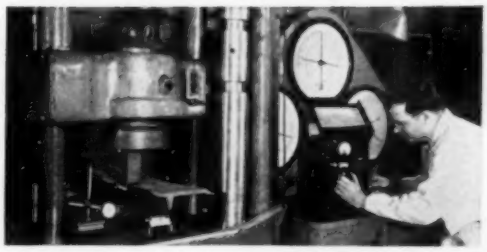
Biggest reason for using only Caterpillar original parts in your machine is a reason you cannot see or feel. It is the *ancestry* of Caterpillar parts.

Behind each and every CAT* replacement part is the experienced engineering, painstaking research, grueling testing, skilled manufacturing and rigid inspecting which make Caterpillar products the standard of the industry. With these truly "pedigreed" parts you can be sure of better all-around performance, less down time.

With substitute parts, can you be sure of anything?

See your dealer's Parts Representative — get Caterpillar original parts every time.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.



Special gauge measures exact amount of strain a track shoe part can endure. Constant testing like this guarantees that all parts are made to the highest Caterpillar standards. Why be satisfied with anything less?

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

NOT in the Contract

A transoceanic plane was caught in the fringe area of a hurricane. Its fuel supply was nearly gone. It was bucking big winds. The situation became so critical that the captain came back to the cabin.

"There are 30 people aboard this plane," he said. "We can never make it to shore with all 30 aboard. I have consulted with my engineer, who has consulted his slide rule. He says that we have only enough fuel to land safely with 26 persons. If four persons will jump out, the other 26 will be saved."

Silence enveloped the cabin for a few seconds. Then a Frenchman arose to his full 5 feet 5 inches, marched down the aisle to the escape hatch, shouted "Vive la France!" and leaped from the plane.

Moved by such courage from his cross-channel neighbor, an Englishman shouted "God save the Queen!" as he jumped from the plane.

Again there was silence. Then a tall American got up and said, "Never let it be said that a Yankee cannot face up to a crisis."

With a lusty "Say hello to Stalin for me!" he grabbed up two Russians and threw them through the escape hatch.

The man entered a taproom, ordered a double Scotch, downed it, then walked straight up the wall, across the ceiling, down the opposite wall and out the door.

"That's very strange," remarked one of the men standing at the bar.

"Yes, it is," said the bartender. "He usually orders bourbon."

A two-headed man from the circus came to the department store without funds.

"I'm the two-headed man with the circus playing here," he said. "Can I charge these ties?"

The clerk looked doubtful. "Do you have any identification?" she asked.

A wedding ring is like a tourniquet; it stops your circulation.

A Southern Colonel entered a dining room at the large resort hotel and commanded the waiter, "You-all kin bring me a Kaintucky breakfast."

"What's that, sir?" asked the confused waiter.

The Colonel gave him a withering glance. "That means," he explained, "That you-all kin bring me a big steak, a bulldog and a quart of bourbon whiskey."

"But why the bulldog?" asked the waiter.

"To eat the steak, suh!" thundered the Colonel.

Removing his shoes, he sneaked up the stairs, opened the bedroom door, entered and closed the door after him without being detected. Just as he was about to get into bed, his wife aroused from slumber, turned and sleepily said, "Is that you, Fido?"

The husband, relating the rest of the story to his construction worker friends, said:

"For once in my life I had real presence of mind. I licked her hand."

Mother and daughter were busy with the wedding plans. "We have so much to do," said the bride-to-be, "we mustn't forget the most insignificant detail."

"Oh," answered the mother, "don't worry about him; he'll be there."

In a local election in Mississippi, officials tabulating the ballots were astounded to discover a Republican vote. There being no precedent for this phenomenon, the sheriff decided, "Let's hold it out till we got a full count." Then — wonder of wonders! — another Republican vote turned up "That settles it," roared the sheriff. "The low-down varmint voted twice, so we won't count either of them."

"Mother," asked the little boy, "am I descended from a monkey?"

"I'm not sure, dear," said the mother, "I don't know your father's family very well."

A girdle is an accessory after the fat.

The girl spoke to the boy in the darkened recesses of the living room. "Sometimes Dad takes things apart to see why they don't go."

"Yes?"

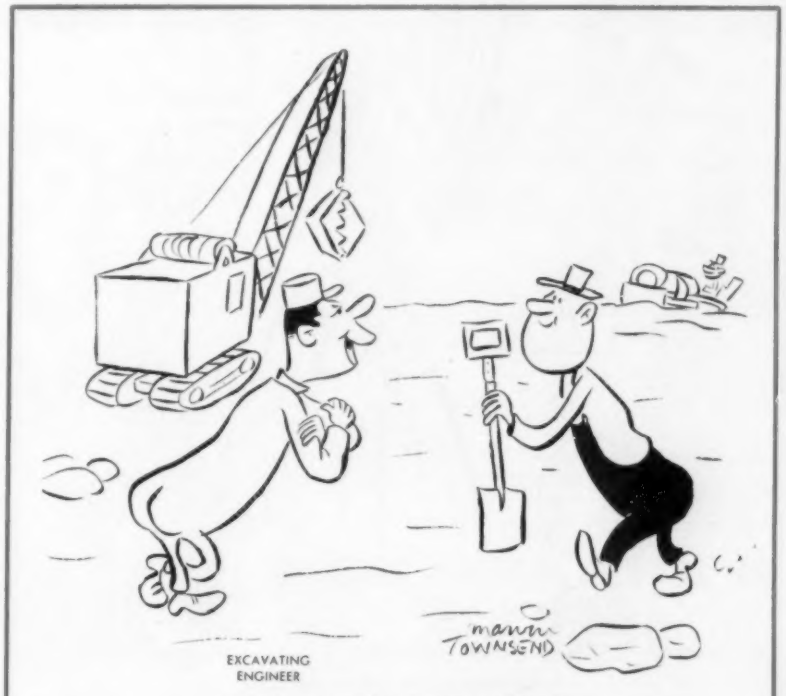
"Yes, so you better go now, Willie."

The manager of the pro football team spotted a rookie one day. "You look good out there, kid. What's your name?"

"Breniganskowitch."

"Oh! What's your nickname?"

"The boys call me Judge because I've sat on the bench so long."



"Thanks, son, just slip it under my elbows."

New Equipment . . .

Continued from page 60

tion in which he is digging. Valve controls are in easy reach of the operator's seat. In addition, the operator has excellent vision clear to the bottom of the hole, even when digging at maximum depth of 13 feet.

Improved Clam Buckets

Manufacturer: George Haiss Mfg. Co., Inc., New York, N. Y.

Claims: HiPower clamshell digging buckets in ⅛-yd. and ¼-yd. sizes now feature oversize diameter centershaft, extra heavy double-ribbed blade arms; sturdy reinforcements welded to side and back plates and heavy duty connecting arms. The buckets are drilled for side cutter attachments. All improvements are furnished as standard equipment.

Thor Utility Hammer

Manufacturer: Thor Power Tool Co., Aurora, Ill.

Claims: A newly developed air-operated, all-purpose utility hammer featuring "stop rotation" for alternate use as a rock drill or as a cement chipping hammer has been announced by Thor. The 14-lb. tool is known as the Thor No. 15 Utility Hammer.

The exclusive "stop rotation" feature was developed, according to Thor, because of strong demand from technicians for such a tool. A simple external cam lever control permits instantaneous change from rotative to straight hammering action. Automatic rotation action is needed for drilling in stone and concrete. The tool is converted to straight hammering action for starting holes, chipping, light clay digging and demolition work.

The No. 15 cuts round holes to diameters up to 1⅝ inches. Exhaust air blows the chips out for faster drilling and to circumvent the danger of "stuck" steels. Simplified lubrication has been engineered into the tool.

The tool will be furnished in two versions, 15D and 15W, with the former for use as a dry tool and the 15W as a wet tool to meet the problem of dust control. The No. 15's length overall is 17¼ inches with ⅜-in. air hose and air

hose inlet provided for. The standard chuck supplied is a ⅞-in. hexagon x 3¼-in. for long shank accessories. The 15D model has a screw-on beehive retainer for collared shank accessories and three Allen wrenches. The 15W model is furnished with the same accessories as above, plus water inlet swivel, water shut-off valve, water inlet plug and water port plug.

Kits and accessories available will include rock drilling steels and bits, paving breaker moil points, clay digger spaes and adaptors permitting use of a wide assortment of standard star drills and chisels.

Portable Generators

Manufacturer: Master Vibrator Co., Dayton 1, Ohio.

Claims: A new line of portable gasoline engine-driven generators has been developed by the manufacturer. AC and DC models are available in 750 and 1,500 watt and 3 and 5 KW capacities. All models have direct-connected engine and generator, automatic pilot light and voltage regulators. They are shock mounted for minimum vibration and equipped with air-cooled engines and automatic governors. The 750 and 1,500-watt models are powered by Briggs & Stratton engines; the 3 and 5-KW models by Wisconsin engines.

Braided-Wire Hose

Manufacturer: Raybestos-Manhattan Inc., Manhattan Rubber Div., Passaic, N. J.

Claims: Raybestos-Manhattan announces a new, high-visibility hose of

Continued on page 68

"I told Stinky his dad couldn't flatten you any day of the week."

WHEN THE GOING GETS TOUGH

Haddad Construction brings its MARION on the Job

Haddad Construction Company of Columbus, Ohio, has 2 of 4 contracts for constructing a heavy sewer line through seven suburban areas and a portion of East Cleveland. Total length is 10 miles of which Haddad has about 6 miles or 32,000′.

A MARION 362 with a 2-yard hoe dipper was used to dig the first 1,000′; then was replaced by other excavating equipment. Recently at about the halfway mark, when hard, closely laminated blue rock was encountered, the MARION's ruggedness and performance was again needed to remove 5′ of dirt and sandstone and then 10′ of hard blue rock.

The choice of machines was simple. Through experience Haddad officials knew their MARION could outperform any of six makes of excavating equipment they owned. They knew it could take more wear and tear when digging in hard blue rock.

It's the reason a Haddad official said, "Whenever we run into a tough job, we bring in our MARION 362. It really handles the work."

Whatever your job requirement, there is a Marion machine of the right size and type for greatest efficiency.

MACHINE	SHOVEL CAP. CU. YD.	MAX. CRANE RATING IN TONS @ 12′ RAD. EXCEPT AS NOTED CRAWLER	TRUCK	WAGON	HOE CAP. CU. YDS.	ASK FOR BULLETIN NUMBER
MARION 32-M	¾	*17½	*25	*25	¾	416
MARION 43-M	1	*27	*35	—	1–1¼	415
MARION 362	1½	37	—	—	1½–2	398-D
MARION 372	—	43	—	—	—	—
MARION 83-M	2	60	—	—	2–2¼	414
MARION 87-M	—	75	—	—	—	—
MARION 93-M	2½	80	—	—	—	397-E
MARION 101-M	3	84	—	—	—	417
MARION 111-M	4	169	—	—	—	402-B

*Rated at 10′ Radius in Accordance with General Practice.

MARION POWER SHOVEL CO.
MARION, OHIO, U. S. A.

Please send bulletin #398D on the Marion 362.

NAME _____ TITLE _____

COMPANY _____

ADDRESS _____

CITY _____ STATE _____

New Equipment . . .

Continued from page 66

braided wire construction for pressures up to 2,000 psi. According to the manufacturer, the hose is strong enough for air actuating service on the heaviest machinery and loading equipment, yet is light and flexible enough for pneumatic tools.

The hose is built with special steel braids that offer strong resistance to accidental crushing in mine and quarry service. The hose also has a neoprene tube that withstands hot oil from compressors. A bright yellow cut-resistant cover is provided.

The hose is sold under the names of Super-Master BW Air and Super-Master BW Water.

Grapple-Magnet

Manufacturer: M. P. McCaffrey, Inc., 2131 E. 25th St., Los Angeles, Calif.

Claims: McCaffrey has developed a combination grapple-magnet.

Designed for handling baling material, small loose material, prepared scrap or for clean-up, the grapple-magnet relies on four keenly-pointed tines to achieve penetration into all types of scrap metals. The sharp prongs bite deeply into the scrap, holding it firmly while being carried overhead and preventing the load from slipping.

The grapple-magnet may be used separately as a magnet or as a grapple, or as both at the same time.

The grapple-magnet is designed to fit in an 8-ft. truck body. The grapples weigh approximately 2,300 pounds; the magnet, 1,100 pounds.

Frameless Dump Trailer

Manufacturer: Anthony Co., Streator, Ill.

Claims: A new dump trailer, the Anthony Teleramic frameless, has been announced by the Anthony Co.

When dumping a load, the entire

front end of the trailer is lifted by a single hydraulic telescopic cylinder mounted on the tractor fifth wheel coupling. In raising or lowering, the trailer body pivots around the rear wheels. During this cycle, tubular stabilizer arms, pinned both to the hoist-fifth wheel and the trailer body, give added support for a variety of loads and working conditions.

Hoist location over tractor driving wheels gives good traction for spreading.

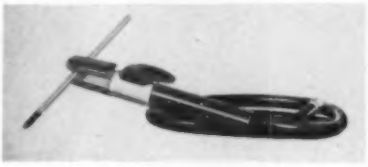
Cutting, Gouging Torch

Manufacturer: Arcair Co., 423 S. Mt. Pleasant St., Lancaster, Ohio.

Claims: Arcair announces the Model G-5 Arcair cutting and gouging torch especially designed for heavy duty work.

The G-5 features new impact-resistant moulded jaw insulators and a new silicone glass laminate sleeve to protect the upper end of the handle from the heat. The torch will take up to ⅝-in. diameter electrodes and will deliver almost twice as much air as the previous G-3 model.

The G-5 operates from an ordinary DC welding machine and a compressed air line. The G-5 has a rotating nozzle



that permits changing electrode angle to suit the job but always maintains air jet in perfect alignment. Air and current are brought to the torch through a concentric cable. Depth of cut and amount of metal removed can be controlled closely by the operator.

The Arcair process removes defects in castings or forgings and cleans the roots of welds and removes welds as well as grooving, beveling, gouging or cutting mild steel, stainless steel, hard alloys, brass, bronze, monel and cast iron. Grooves left by the torch are clean and ready to weld without further preparation.

35-Ton Truck Crane

Manufacturer: Marion Power Shovel Co., Marion, Ohio.

Claims: Marion has added another model to its line of truck cranes. The new 43-MR has a capacity of 35 tons at 15-ft. radius with outriggers set. Operation is air-controlled.

The unit is specially designed to meet highway travel regulations without the problem of wholesale dismantling. It features dual front axles for weight distribution, power-removable counterweight and a 180-in. wheelbase.

Injector Test Unit

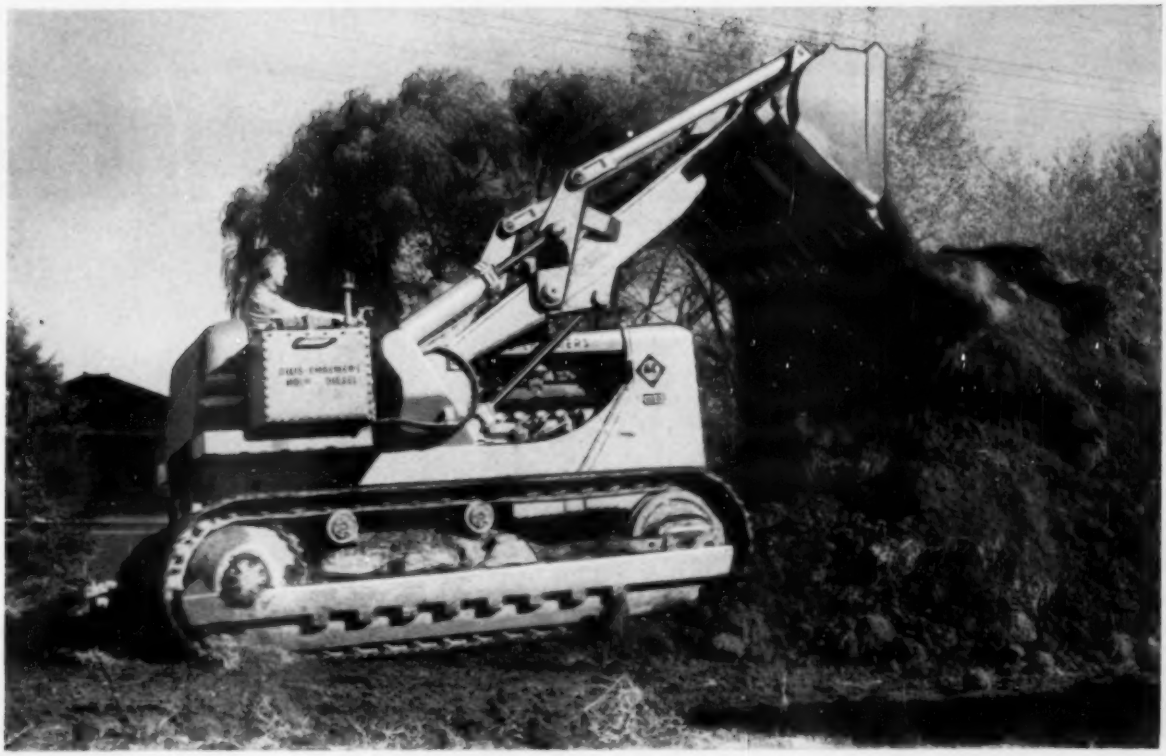
Manufacturer: Diesel Control Corp., Wilmington, Calif.

Claims: The Unitest Model U-8000 diesel fuel system testing unit, originally developed by Diesel Control for its own use in servicing injectors and pumps, is now available to fleet operators for General Motors series 71 engines.

The fixture is electric motor driven and has a clutch throw-out of the camshaft drive. A locking lever positions the injector to be calibrated and run-in, and automatically connects the fuel-in and overflow lines.

Fuel is stored in the base. It passes through both a strainer and final stage filter between a GM primary pump di-

Continued on page 72



"We dig between 175 and 200 basements a year, so I sure like this new 2¼-yd Allis-Chalmers HD-11G.

It handles just like a kitten"

George Pfeiffer, *Crystal Lake, Illinois*

Excavating basements, loading out trucks and landscaping work keep George Pfeiffer busy the year 'round. Like all contractors, big or small, he tries to make every hour count.

"I like everything about our 11G, including its over-all speed and reach. We can heap big truck loads fast and easy.

"When we bought this Allis-Chalmers HD-11G, we didn't figure on using it in close around homes, but we've found that it handles just like a kitten. It responds so quickly that we're using it just like our 1-yd Allis-Chalmers tractor shovel."

• • •

To get high production on fast-moving job assignments, at a profit, more and more contractors are choosing the new HD-11G. It's a truly modern tractor shovel, with all the advantages of Allis-Chalmers advanced basic design, including an all-steel box-A main frame; one-piece steering clutch and final drive assembly; 24-volt direct electric starting; unit construction; and 1,000-hour lubrication intervals for truck wheels, support rollers and final drives.

What's more, the HD-11G has what it takes for big, tough jobs — 105 net engine horsepower; 2¼-yd bucket capacity; 11-ft, 7-in. dumping height; 32,000 lb of balanced weight; almost 9 ft of track on the ground; 8 heavy-duty truck wheels per side; long-wearing ceramic master clutch lining; and a constant mesh transmission that eliminates double shifting.

All in all, the Allis-Chalmers HD-11G is tops as a tractor shovel. Let your Allis-Chalmers dealer prove it to you in a demonstration. It will be well worth your while.

ALLIS-CHALMERS
CONSTRUCTION MACHINERY DIVISION
MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS

Big

In constructing an expressway from Boston to Hingham, Mass., 850,000 yds. of fill were needed to cover an old peat bog near East Milton. This 3-yd. 71-B shovel, owned by Marinucci Bros. & Co., Inc., loads granite and grout which was used for fill.

BUCYRUS ERIE

SOUTH MILWAUKEE, WISCONSIN

output is built right in

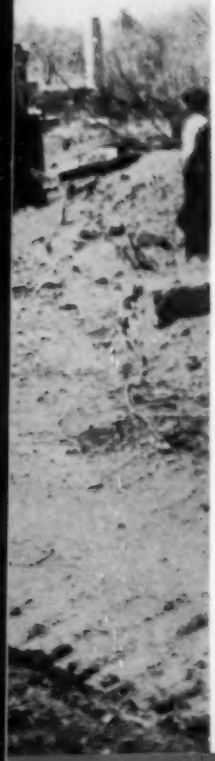
WITH BUCYRUS-ERIE INDIVIDUAL DESIGN

INTEGRITY IN DESIGN

We believe that the right way to build an excavator is to match every part — from boom point to treads — to the specific rated capacity of the machine. At Bucyrus-Erie we call this *Individual Design.*

HERE'S WHAT IT MEANS

Individual Design means striking the right balance between power, weight and speed for sustained high output at low cost *over a long period of time.* Bucyrus-Erie excavators match engine to dipper size so there's no waste of power; deck machinery components are not overloaded or underworked; boom strength and weight are right for the dipper size. There's never any "stretching" of machines to create "new" models — never any overdippering or underpowering.



HERE'S HOW IT PAYS OFF

This kind of design keeps Bucyrus-Erie excavators out front in production, with all parts working in smooth, efficient coordination. It keeps them on the job year after year with minimum down time and maintenance — there is no excess wear and tear on moving parts.

Individual Design is a big reason why Bucyrus-Erie excavators are still working profitably when others have lost their usefulness.

Your operations can use this kind of money-making performance so get the full details from your nearby distributor. He has all the facts on Bucyrus-Erie excavators from ⅜ to 4 cu. yd.

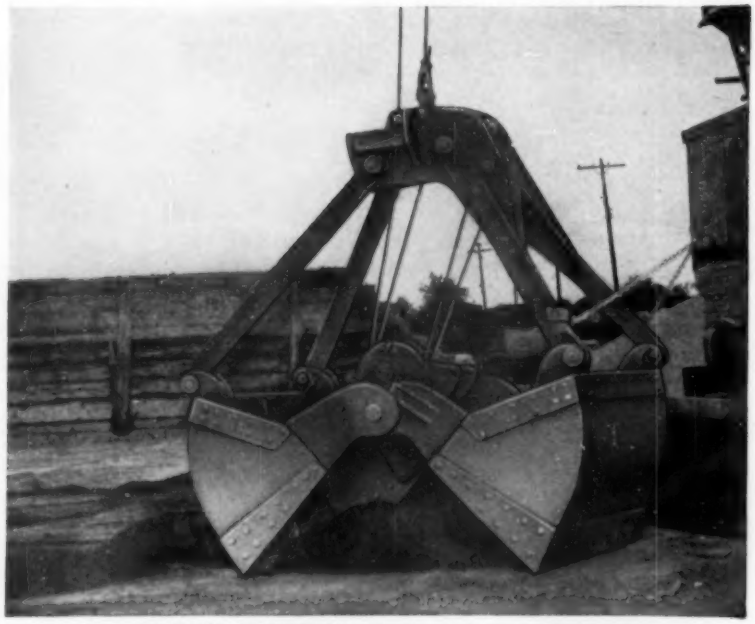
170E55C

75 YEARS OF SERVICE TO MEN WHO SHAPE THE EARTH

and grout which was used for fill.

SOUTH MILWAUKEE, WISCONSIN

"We like ERIE WIDE REHANDLERS they really pick up and clean"



1½ yard ERIE Wide Rehandler in action at Vanbro Construction Corp. Sold by Hodge and Hammond, New York City.

That is what Mr. R. Vanderbilt, vice-president of Vanbro Construction Corp., Staten Island, New York, has to say about his Erie Strayer 1½ yard bucket.

"Erie's ability to pick up and clean makes it ideal for barge unloading," reports Mr. Vanderbilt.

Vanbro's yard is one of the hard-working installations where Erie buckets prove themselves every day in the toughest service.

Crushed stone and gravel work demands fast production and rugged, dependable service. And Vanbro, like hundreds of other Erie users, finds these qualities engineered in Erie products.

They're the buckets that turn out more work—faster!

These better buckets provide these *"wanted"* features:

1. Top closing power from block and tackle, plus lever arm construction, plus precision balancing.
2. Manganese steel teeth and high carbon steel lips that bite up full payloads of even toughest clay and gumbo.
3. Rigid, one-piece, welded head that shrugs off bumps and jars. No shimmy. No wobble.
4. Two-line, continuous reeving. Adds up to 50% to cable life. Less down-time for reeving.
5. Low head room for fast work in tight quarters; low center of gravity for easy positioning.

ERIE — BUCKETS THE WORLD OVER

For catalogs, write Dept. E36

ERIE STRAYER CO.

936 GEIST ROAD • ERIE, PENNSYLVANIA

New Equipment . . .

Continued from page 68

rectly connected to the motor and the injector. Cam, rocker arms, tappet, roller and other moving parts are standard GM series 71 parts.

The calibrating mechanism consists of a standard graduate glass and a timer that permits continuous identical calibrating runs. It is claimed by the manufacturer that the unit eliminates the possibility of putting back into service an injector that does not exactly equal the fuel delivery of others used on the same engine.

180° Swing Loader

Manufacturer: Pettibone Mulliken Corp., 4726 W. Division St., Chicago 51, Ill.

Claims: The Speed Swing, a 180° swing loader, is being manufactured by Pettibone Mulliken. The Speed Swing has a full 30° bucket tilt-up at ground level.

The Speed Swing also can perform as a regular front end loader with a 5,000-lb. capacity.

Essick Vibrating Rollers

Manufacturer: Essick Mfg. Co., 1950 Santa Fe Ave., Los Angeles, Calif.

Claims: Essick has announced production of three models of vibrating rollers. They are the hand-operated and self-propelled 28-in. Model VR 28 W; the self-propelled and tandem 32-in. Model VR 32 R; and the trailer-type 54-in. Model VR 54 T.

Tatkos . . .

Continued from page 33

dumps and two cutting mills containing a total of three diamond saws.

Clear New York State purple, clear black, gray and green slate are taken from Everest's Hatch Hill quarry. Overburden is about 40 feet deep and is of rock, shale and dirt. The quarry has been worked several years.

Everest's equipment includes two 15-B's, a D7, several fork lifts, one GMC and one International 10-wheelers and a Jeep station wagon.

After blasts, workmen quarry good slate in blocks 6, 8 and 12-in. thick. This involves a drilling, plugging and cleaving operation with hand-held tools.

Use Inclined Cableways

Inclined cableways generally are used to transport the slabs out of the pit, although on occasion shovels load them to the trucks.

In the plant areas adjacent to the pits, the slabs go through a drilling, cutting and splitting operation in further processing. Flagstone is hand split into irregular slabs; roofing slabs are hand trimmed. Flagstone of specific dimensions is sawed on the diamond saws.

The cutoff saws, which handle the one-direction slabs, have accelerated the Tatkos' production.

All flagstone is irregular in size. Flooring and roofing stone are dimensioned. Roofing comes from 12 to 24-in. lengths by random widths. Flooring ranges from ¼ to 4 square feet in area. Thickness of the processed slate varies, often from ⅜ to 1 inch.

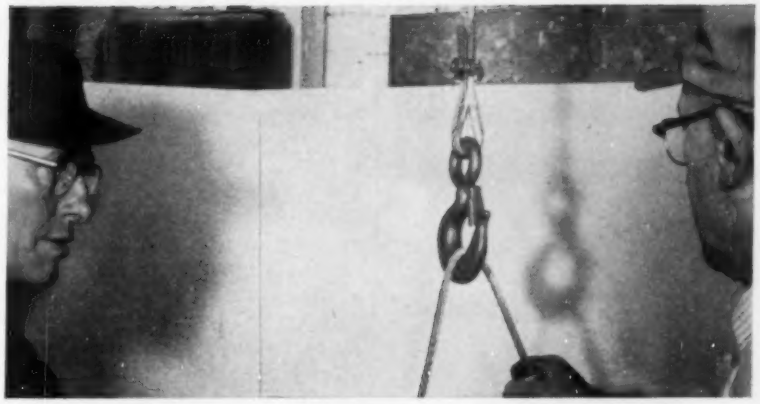
Excavating Engineer visited the Tatko quarries on an October Saturday in which the New York and Vermont hills were at their height of autumnal beauty. Rain came down in spurts, but there was activity at all the quarries.

Work 12 Months

The Tatkos, in fact, work the quarries 12 months a year, though John admits that production is not large in the winter. He feels, however, that he has a duty to keep his employees active the entire year.

Guarding quarried slabs against freezing is a major winter problem, John Tatko said. Once frozen, the slabs become valueless.

The Tatkos use the winter months in preparing for a full schedule in spring, summer and autumn. Mechanization keeps their production high.



SAFETY HANGS BY A HOOK

It's small and relatively inexpensive, but a hoist hook carries the full load —as much as a crane is designed to handle! All hooks may look similar, but Laughlin hooks offer a combination of features that make them outstandingly safe. First, they are forged from special bar quality steel, then accurately heat treated; finally, Laughlin's precision die design controls the metal's grain flow during forming to keep the elastic limits of the hooks at their proper ratings.

Next time you need hooks remember that *safety hangs by a hook*—and Laughlin hooks are the safest!

THE RIGHT COMBINATION

An exacting combination of design, steel and drop forging goes into Laughlin Shackles. A combination that results in maximum strength without brittleness that can result in fracture under shock load or in extreme cold. Pins used in Laughlin Shackles are forged from the same high quality steel —their extra hefty design makes them safer when shock loads accidently occur. When you see the famous Laughlin trade mark on shackles (and all other Laughlin fittings), you're seeing the mark of safety! Your nearby Laughlin Distributor has shackles in sizes from 3/16" to 3".

LAUGHLIN LINKS INSTALLED QUICKLY

Lower downtime—fast changeover is reported by companies using super safe Laughlin Double Clevis Links to couple standard and alloy chains to fittings. Users everywhere have cut out expensive, time-consuming welding and blacksmithing in favor of simple installation. Laughlin's heat treated Double Clevis Link attaches ¼" to

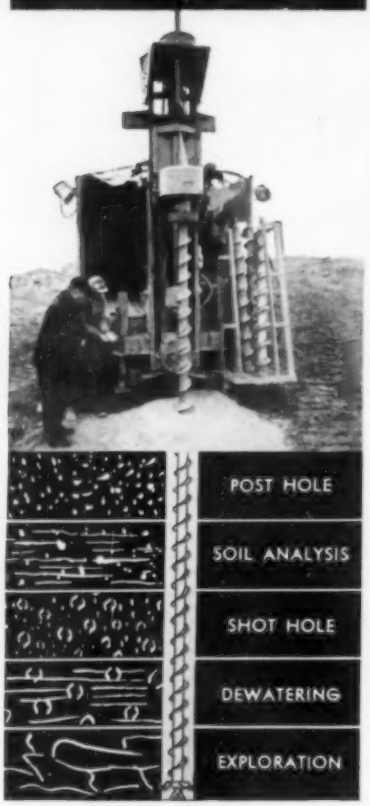
½" chain to rings, end and sling links, eye hooks, pad eyes, tractor eye bolts and other fittings.

The world's most complete line of fittings for chain and wire rope is described in the catalog available from your Laughlin Distributor, or Thomas Laughlin Division, American Hoist & Derrick Co., Portland, Maine.

SAFETY IN SIGHT

Ever worried about your crew forgetting the rated capacity of a block? You're free from worry and they're free from danger with Crosby "Load-Rated" Blocks because the load capacity is *embossed* in the side plates! A quick glance shows what the limits are —no chance to overload the block by mistake. Crews the world over are protected by Crosby "Load-Rated" Blocks —are yours? Crosby Products Division, American Hoist & Derrick Co., St. Paul 1, Minnesota.

DEEPER, FASTER
McCARTHY NEW HEAVY-DUTY
VERTICAL AUGER DRILLS



AUGER DIAMETER	DEPTH OF BORE
20" and 24"	16' to 30'
12" and 16"	60' to 70'

for drilling in earth, clay, compacted sand and gravel, and soft shale formations.

3", 4½", 6", 8" and 9"	up to 125'

for drilling the above, plus drilling in hard sandstone formations.

Choose the most desired size auger for each drilling depth, in any vertical drilling operation. The new McCarthy Model 106-24 Vertical Auger Drill handles augers from 3" to 24" in diameter.

Adjust drilling speed properly for various rock and earth formations. Model 106-24 has two output shafts, one speed for earth and one for rock. A gear reducer slows auger rotation for harder rock formations. This gives more torque, or "biting power" in sand rock and soft limestone.

Write for Bulletin M-100

THE SALEM TOOL CO.
SOUTH ELLSWORTH AVE.
SALEM, OHIO, U. S. A.

Pipelines . . .

Continued from page 39

kept on each machine for this purpose and during the slow winter months each piece of equipment was sent to the shop at Evanston for a complete going-over. This job was supervised by Harold Hansen, master mechanic, who has been with the company for about 20 years. He's just one of a number who have had long service with the company.

Others who have many years of service with Contracting and Material Co. are: John T. Murray, treasurer, who has been with the firm from the very beginning; James V. McNulty, general superintendent, with 33 years of service; and Herman Wolf, in charge of parts and tools, with 35 years. John M. White is chief engineer for the firm. Raymond Flood was in charge of compressor station work and John Myers was field office manager.

Fry Is Efficient

Field Superintendent Fry, who is a study in quiet efficiency that suggests experience, also started with the company as a young man, and has been with it since 1938. Others in charge on the pipeline job were: Earl Singletary, bending; Phil Fitzgerald, pipe gang; Bob Van Cleave, welding; Otis Barker, cleaning, priming and dope; Cal Ashley, pipe stringing; Marion Fitzgerald, rock gang; Duncan Marquis, ditching; and Walter Tucker, lowering and tieing-in.

All of these men, working together as a unit have done much to build and to keep the company's reputation for dependability. The company is well known in the Chicago area, not only for pipelining, but for such past projects as the Edens Expressway overpass and the Congress Street superhighway bridge at Cicero Avenue. More will be heard from them.

San Antonio . . .

Continued from page 27

possible, even though lifts were up to 12-in. thick.

All equipment was maintained in the field by a headquarters shop at the damsite. One of the more unusual innovations was a lubrication contract with Mike Roach of Claremont, who used a mobile service rig to take care of periodic manufacturer-recommended lubrication. Texaco greases and oils were used exclusively.

San Antonio Dam was designed and is being administered under the general supervision of Col. Arthur H. Frye, district engineer of the Los Angeles district office of the Corps of Engineers. William J. Leen, chief of operations is his principal assistant. Jack Maxwell was resident engineer on the project. For Winston Bros. Co., operations were under the general supervision of F. G. Peterson, project manager, with William Sell as project engineer and Ruben Habeck as master mechanic.

Completion of San Antonio Dam means that additional flood damage on this important watershed east of Los Angeles will be a thing of the past in the years ahead.

"What'sa matter, Joe? Ain'tcha feeling so good today?"

New Trade Literature

Subject: **Timber Structures**
Content: Timber Engineering Co., research affiliate of the National Lumber Manufacturers Association, has reprinted the third edition of *Typical Designs of Timber Structures*, longtime standard guide used by architects and engineers in planning light and heavy wood structures. More than 100,000 copies of the guide's three editions have been distributed on individual requests from designers and engineers. The third edition contains 102 typical designs that illustrate suggested methods of applying the Teco timber connector system in wood framing for the more commonly encountered structural problems in timber roof trusses, bridges, towers, hangers, grandstands and farm buildings.
Where to get: Timber Engineering Co., 1319 18th St., NW, Washington 6, D. C.

Subject: **Wireco Slings**
Content: An 80-page catalog features 54 types of Wireco slings with accompanying capacity tables for each. The most commonly used fittings are also illustrated with capacity tables.
Where to get: Wire Rope Corp. of America, St. Joseph, Mo.

Subject: **Frost Action in Soils**
Content: Bulletin No. 111 of the Highway Research Board contains seven technical papers on the subject of frost action in soils and related problems. Price of the 110-page publication is $2.25.
Where to get: Highway Research Board, National Academy of Sciences—National Research Council, 2101 Constitution Ave., Washington, D. C.

Subject: **Self-Propelled Crane**
Content: A four-page illustrated bulletin describing the Model CR-35 Bantam self-propelled crane is now offerred by Schield Bantam. The folder contains detailed information concerning specifications, features, operating data and capacities of the ⅜-yd. 6-ton crane-excavator. Ask for bulletin No. CR-501.
Where to get: Schield Bantam distributors, or Schield Bantam Co., Waverly, Iowa.

Subject: **15-B Excavator-Crane**
Content: A new bulletin describing the Bucyrus-Erie 15-B excavator-crane is now available. Illustrated with on-the-job photographs and closeups of mechanical features, the 40-page booklet includes complete specifications and working ranges. The 15-B is a ½-yd. shovel convertible to dragline, clamshell, dragshovel or lifting crane for handling a wide range of excavating and lifting jobs. It is offerred with gasoline engine, diesel engine or electric motor. Other basic features described are: directly handset clutches; all-welded revolving frame; crawler mountings; strong, light-weight shovel front end; positive twin rope crowd system; fully independent boom hoist; four-way safety control of boom lowering; and full-rotating dragline fairlead. Write for Bulletin 15-B-4.
Where to get: Bucyrus-Erie excavator distributors or Bucyrus-Erie Co., South Milwaukee, Wis.

Subject: **Vibrating Screens**
Content: A 20-page booklet, illustrated with field pictures and general and detail views of various units, presents the Pioneer line of Super Service vibrating screens. Text materials on the screens is supplemented by data tables on capacities. The booklet also has information about washing attachments, spouts, chutes, hoppers, proper screen installation and typical applications. Ask for form 652.
Where to get: Pioneer Engineering Works, Inc., 1515 Central Ave., Minneapolis, Minn., or Pioneer distributors.

Subject: **Mall Tools**
Content: The complete Mall line of portable gasoline engine tools is presented in a 63-page catalog. Data is listed on MG chain saws, generators, land clearance saws, pumps, earth and wood augers, vibratory earth borers, concrete vibrators, troweling machines, concrete surfacers and attachments, saw chains, conversion sprockets and accessories. Information on electric and pneumatic chain saws is also included. Ask for catalog 32.
Where to get: Mall Tool Co., 7725 S. Chicago Ave., Chicago 19, Ill.

Subject: **Hercules Dump Bodies**
Content: A 4-page catalog describes the Hercules line of dump bodies, hydraulic hoists, trailer dumps, hydraulic Load-N-Gates and special truck equipment. All models are illustrated. Capacities and recommended applications are listed. Capacities of the units

STANDS UP TO SEVERE USE

and even abuse

One word describes a Hayward — *ruggedness.* Yes, it's as tough, strong, sturdy as a bucket can be — and even more so. Extreme simplicity, little if any upkeep, high operating efficiency! Details on request. Write! THE HAYWARD COMPANY, 50 Church St., New York 7, N.Y.

HAYWARD BUCKETS

CLAM SHELL • ELECTRIC • ORANGE PEEL • GRAPPLES
famous for performance since 1888

RENT INTERLOCKING STEEL SHEET PILING

"FASTER from FOSTER"

ALL LENGTHS & ALL SECTIONS TO MEET ALL YOUR JOB NEEDS

Foster's lower rental rates on all standard piling sections give you a low fixed expense as an added competitive advantage when bidding on jobs. RENT: Light-weight Corrugated Steel Sheet Piling—Pile Hammers and Extractors.

Send for: Piling Chart EE-3.

L. B. FOSTER CO.

PITTSBURGH 30 • NEW YORK 7 • CHICAGO 4
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YOUR OPPORTUNITY!

UNUSED Army Trucks
2½, 3½, 5-ton

GMC-DIAMOND T & INTERNATIONAL 6x6's

- From Government Storage!
- Unused and Guaranteed!
- Factory-New Condition!
- Delivered on Approval!
- Reconditioned Trucks Also Available!

Tandem axle trucks with front wheel drive, 10 forward speeds, overdrive, brand-new mud and snow tires. Carry maximum loads, give extra power you need in "rough going" . . . at LESS, often half the COST of conventional new trucks.

For Specifications, Prices, Delivery:
Phone Collect
MILTON Y. TOOMBS, Jr.
Sales Manager

MEMPHIS EQUIPMENT Company
CONSTRUCTION AND AUTOMOTIVE EQUIPMENT AND PARTS
766 SO. THIRD ST. MEMPHIS, TENNESSEE

range from 6 to 35 tons. Ask for catalog 325.

Where to get: Hercules Steel Products Co., Galion, Ohio, or Hercules distributors.

Subject: **Explosives Handling**

Content: A new 4-page Atlas bulletin contains a revised list of instructions and warnings on the proper handling and use of explosives and blasting supplies. The new rules were recently approved by the Institute of Explosives Makers. The bulletin lists 72 "Do's and Dont's" to be observed while transporting, storing, handling, loading or tamping explosives when shooting either electrically or with cap and fuse. Warnings applying to underground work, actions to be taken after firing, and methods of explosives disposal are given. Approved methods for priming an explosive cartridge with both cap and fuse and with electric blasting caps are described and illustrated. Eleven suggestions for minimizing poisonous gas hazards arising from blasting operations are also included. Single copies are free.

Where to get: Technical Div., Atlas Powder Co., Wilmington 99, Del.

RECONDITIONING OF YOUR GMC 71 DIESEL INJECTORS

Production Line Price & Quality Control

You Get Quickest Service From Your Nearby HANCOCK Dealer. Write Us For His Name. Service Also Available on G.M.C. & International Plungers & Bushings and Cat. Pumps & Nozzles.

Write for Catalog

HANCOCK
DIESEL SERVICE CO.
372 Walnut St. Findlay, Ohio

Subject: **Everett Trencher**

Content: Features of the Everett trencher designed for use on Massey-Harris Ferguson 35 tractors are presented in a 4-page bulletin. The trencher unit cuts up to 42 inches deep in a width of 12 to 18 inches. It is recommended for drainage and irrigation ditching; foundation work and water, gas, oil and power-line trenching. Operating from the power take-off of the tractor, the unit is raised and lowered by a built-in hydraulic system.

Where to get: The Earth Equipment Corp., 2036 Sacramento St., Los Angeles 21, Calif.

Subject: **Pump Maintenance**

Content: Helpful hints on maintenance of initial pump efficiency and choosing a dredge pump that best fits a particular need are discussed in a new bulletin describing Morris GA and GAF dredge pumps. The bulletin outlines the 24 models, ranging from 6-in. to 20-in. size, in this line. Ask for Bulletin No. 184-A.

Where to get: Morris Machine Works, Baldwinsville, N. Y.

Subject: **Concrete Mixer**

Content: Features and advantages of the Model 6-S Dandie concrete mixer are described in an 8-page bulletin released by the Kwik-Mix Co., a subsidiary of Koehring Co. The mixer has a one-bag capacity and can be powered by a 10 or 16 hp gasoline engine.

Where to get: Kwik-Mix Co., Port Washington, Wis., or distributors of Kwik-Mix products.

Subject: **Six-Wheel Trucks**

Content: Features of International six-wheel trucks—both conventional and cab-over-engine models—are described in a 24-page catalog now available from the motor truck division of International Harvester. Illustrated in color are S-line, R-line and CO models which are powered by gasoline, diesel, or LPG engines. Numerous cut-away views of engines and transmissions are provided. As straight trucks or as tractor-trucks, International six-wheelers range in gross vehicle weight ratings from 22,000 to 60,000 pounds, and in gross combination weight ratings from 35,000 to 65,000 pounds. Ask for Form CR-860-E.

Where to get: Consumer Relations Dept., International Harvester Co., 180 N. Michigan Ave., Chicago, Ill.

Subject: **Safety Manual**

Content: The National Safety Council has published an expanded third edition of its *Accident Prevention Manual for Industrial Operations*. Designed as a basic text for the safety man's shelf, the new edition includes all the information needed to organize a comprehensive safety program and keep it going. In addition there are many chapters covering the specific types of hazards found in most industrial operations. The 1,341-page manual contains 43 sections, 17 of them completely new, and the others extensively revised and brought up to date. The manual tells how to set up safety committees, maintain interest in accident prevention activities and develop favorable publicity and public relations. There are chapters on accident records and injury rates, accident investigation and costs and workmen's compensation insurance. Technical information is provided on subjects such as pressure vessels, handling materials, conveyors, machine tools, welding, portable power tools, electrical hazards, flammable liquids and many others. The Accident Prevention Manual is priced at $13.50.

Where to get: National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

Subject: **Wire Rope Slings**

Content: A three-color wall chart, suitable for use near hoists or cranes, lists diameters and lifting capacities for Acco-Registered wire rope slings. Size of the chart is 17 x 21 inches.

Where to get: American Chain & Cable Co., Wire Rope Sling Dept., Bridgeport, Conn.

Subject: **Federal Aid for Highways**

Content: A 24-page booklet, *Federal Aid for Highways*, has been published

by the National Highway Users Conference. The booklet explains what Federal aid to highways is and how it works. It includes a description of the various Federal aid highway systems, explains how Federal aid money gets to the states, outlines the required matching provisions and details the design standards for Federal aid roads. It also contains a chapter on the U. S. Bureau of Public Roads and lists the milestones in its development. Maps, charts, pictures and drawings illustrate the text.

Where to get: National Highway Users Conference, 966 National Press Bldg., Washington, D. C.

Subject: **Asphalt Installations**

Content: *Asphalt Leads the Fight Against Beach Erosion* is the title of an 8-page illustrated folder published by the Asphalt Institute, which describes the installation of asphalt groins at Ocean City, Md. Reports on asphalt grouting techniques for jetties, sea-walls, dikes and levees are included. Single copy price is 45 cents.

Where to get: The Asphalt Institute, Asphalt Institute Bldg., University of Maryland, College Park, Md.

Subject: **Flexible Hose**

Content: A 6-page bulletin gives information and prices on the Flexaust hoses and Portovent ducts for moving air, dust, fumes and materials via pressure, suction or gravity. Job applications are shown. Ask for bulletin 60.

Where to get: The Flexaust Co., 100 Park Ave., New York 17, N. Y.

Notes from the Manufacturers

Allis-Chalmers Mfg. Co., Milwaukee, Wis., has elected Willis G. Scholl executive vice president of the company and Boyd S. Oberlink vice president in charge of its tractor group. Scholl started with Allis-Chalmers in 1936 as a salesman in Columbus, Ohio. He later held the position of manager of the firm's Toledo (Ohio) branch. From 1947-'51 he served as eastern territory manager of the tractor division's sales force. He was then named sales manager of the division and in 1952 vice president in charge of the division. The division was reorganized into the tractor group in 1955. He was elected to the board of directors in 1953. Oberlink formerly was vice president and general manager of the firm's construction machinery division. He succeeds Scholl as head of the tractor group which includes the company's construction machinery, farm equipment and Buda divisions. He joined the tractor division in 1934 and has held the positions of assistant supervisor of the allied equipment department and manager of the division's Washington (D. C.) office. He was named vice president of the tractor division in 1951 and vice president and general manager of the construction machinery division last year.

Caterpillar Tractor Co., Ltd., Great Britain, subsidiary of U. S. Caterpillar, has announced plans for construction of a new facility for manufacturing Caterpillar crawler tractors in the United Kingdom. The firm will soon break ground for a 500,000-sq. ft. plant at Glasgow, Scotland. Production of Cat D8 and D4 tractors, exact counterparts of American Caterpillar models, is expected to commence by 1958. The activities of the subsidiary have been confined in the past to the parts replacement business. Development of the Scottish manufacturing project will be under direction of James R. Munro, director of manufacturing, foreign operations. He will be assisted by other American officials and technical experts who will take up residence in the Glasgow area. Managing director of Caterpillar Tractor Co., Ltd., is W. J. Bornholdt.

Cleaver-Brooks Co., Milwaukee, Wis., has formed a new corporation, Cleaver-Brooks Western Hemisphere, Ltd., to expedite foreign marketing of Cleaver-Brooks boilers, industrial oil burners, evaporators, distillation equipment and heating equipment for road construction and ready-mix

Bucyrus-Erie Rock Grabs

Bucyrus-Erie Rock Grabs are well worth looking into now. They can greatly increase the work capacity of your crane in handling large rock tonnage. These tough rock-handling units don't have to get their jaws under a load to lift it . . . two approximately parallel side contacts are all that is necessary. The Grab pinches its load and lifts entirely by friction. The jaws, actuated by a multiple-part rope hitch, grip tightly — the heavier the lift, the firmer the grip.

Available in five sizes ranging from 2½ to 20 tons capacity. Investigate all their advantages today!

18R56C

BUCYRUS ERIE South Milwaukee, Wisconsin

plants. The new corporation will serve all countries in the western hemisphere. R. P. Honnold, export manager of the parent company, has been named vice president in charge of the subsidiary.

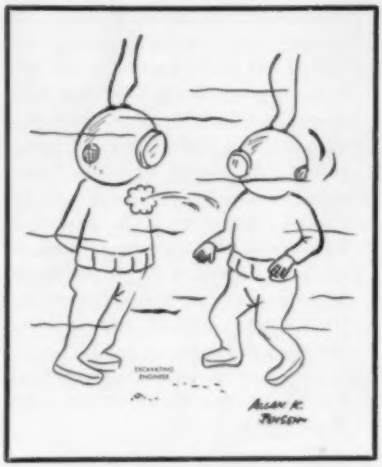
Copco Pacific Ltd., San Carlos, Calif., has established a specialized compressor sales division to service western United States mining and construction industries. The company recently added Atlas Diesel portable and stationary compressors to its line of rock drill and drill steel equipment. Lincoln M. Knight, a member of the Copco sales staff, will head the new section.

Detroit Diesel Div., General Motors Corp., Detroit, Mich., has appointed Peninsular Diesel, Inc., of Detroit, as distributors for General Motors industrial diesel engines. Peninsular Diesel, a newly established company, is headed by Clarke F. Andreae, president, and M. W. Bever, secretary-treasurer. The company will operate throughout Michigan's lower peninsula from its Detroit headquarters at 6565 W. Warren Ave. A branch will be established in Grand Rapids.

Easton Car & Construction Co., Easton, Pa., has elected George D. Fraunfelder vice president of engineering, and U. M. (Ben) Johnson vice president of industrial sales. Fraunfelder formerly was director of engineering and research. Johnson was a project engineer for the firm which manufactures quarry, mine and industrial cars and trailers.

Electric Steel Foundry Co., Portland, Ore., has formed a central sales district with offices in Danville, Ill. The new district will handle sales of ESCO construction equipment, logging and sawmill equipment east of the Rockies and stainless and high alloy products, and cast specialties for central and southern areas. Manager of the new district is Tom P. Kirby, who has been manager of the Gulf and Atlantic and midwest branches, now included in the new district. D. R. Babbitt, who served as manager of the former Chicago sales branch, will devote his full time to management of ESCO's Danville manufacturing plant.

Euclid Div., General Motors Corp., Cleveland, Ohio, appointed Tobin



Tractor Co., 655 Albert St., Regina, Sask., as its distributor in the Canadian province of Saskatchewan. The firm will handle parts, sales and service for Euclid scrapers, rear and bottom dump hauling units and crawler tractors.

The Garrett Corp., Los Angeles, Calif., has announced the appointment of J. D. Johnson as assistant manager of the Northill Co., a Garrett subsidiary. Johnson was formerly a sales engineer for Garrett's air-supply division.

Joy Mfg. Co., Pittsburgh, Pa., has established a development and testing facility at Buffalo, N. Y. The new Turbo-Dynamics Division will conduct research on compressors, turbines and other air and gas handling devices. Head of the Turbo-Dynamic laboratory is L. Roy Krouse.

Koehring Co., Milwaukee, Wis., has named K. R. Chandler as service manager. In his new post, Chandler succeeds G. N. Nelson, who recently retired after 44 years of service. Chandler joined the Koehring engineering staff in 1948. He served as West Coast district sales representative for the firm 1952-'54 and as a member of the service department until his present appointment.

Marion Power Shovel Co., Marion, Ohio, has named two new divisional sales managers. Lawrence E. Schaffer, Columbus, Ohio, will head the company's central sales area. He will be responsible for the sale of small machines in the entire state of Ohio and

Continued on page 80

DOWN GO FIELD EXPENSES!

Expenses are cut to the bone when you have Omaha Dragline Buckets on the job. Forty-five years of experience and improvement produce Omaha buckets built to last in the field. These buckets are reinforced at points of strain to stand up under the toughest jobs. Time and dollar consuming field repairs are reduced. Write now for complete catalog giving specifications of 4 available types.

OMAHA DRAGLINE BUCKETS

DRAKE-WILLIAMS MOUNT • OMAHA, NEBR.

TO ADVERTISE: All advertising in this section is payable in advance. Rate: $1.00 per line, or $12.00 per inch of 12 lines. Minimum charge $4.00. No discounts; no commissions. Please count your copy carefully to avoid delay. Each line contains 41 characters (34 characters if all capital letters are used). Count spaces and punctuation as one character each. Allow 10 characters for box number, if blind advertisement is desired. Be sure to enclose the correct amount of money with your order. Closing date—15th of preceding month. Example: January closes December 15th.

TO INQUIRE: Be sure to address your inquiry to the advertiser by using the correct box number. Mail your letter in care of Excavating Engineer, South Milwaukee, Wisconsin. Write each advertiser a separate letter. Do not write us for name and address of advertiser. This information will not be given out. We have no information about the equipment advertised other than that shown in the advertisements themselves.

LARGE SHOVELS, CRANES, DRAGLINES — 3 YDS. & UP

1—P & H 810 shovel front complete.
1—Esco 3¼ cu. yd. heavy duty rock dipper.
1—Hendrix dragline bucket, medium 4 cu. yd.
1—Hendrix dragline bucket, medium 2¾ cu. yd.
1—Owen 1 yd. rehandling clam bucket.
1—70 ft. conveyor 24" wide, no belt.
1—50 ft. conveyor 24" wide, no belt.

Located at Chattanooga, Tennessee
SERODINO, INC. Phone: Jasper 2371

Marion model 490, serial no. 6201, Ward Leonard control; also spare parts. New York Trap Rock Corp., 230 Park Ave., New York 17, N.Y.

Dragline equipment for Bucyrus-Erie 120-B with 90' boom, boom and hoisting machinery, etc., and 5 yard dragline bucket; Price: $10,000. Equipment may be inspected at the BASALT ROCK CO., INC. Plant, Napa, Calif.

Bucyrus-Erie 200-W diesel dragline shipped in 1950; 125 ft. boom, 6 yd. heavy duty and 7 yd. light weight buckets. Some spare parts included. Good mechanical condition. Location Melbourne, Australia. Box 3682.

200-W Bucyrus-Erie walking dragline diesel powered, 125' boom—5 cu. yd.; type AX bucket; excellent condition; used only for about 18 months; machine delivered new April, 1952; located middle west. For further information address. Box 3683

Marion 360-M dragline with 150 foot boom and 10 cubic yard bucket; shipped 1928; location Illinois. Address Purchasing Agent, Truax-Traer Coal Company, 111 North Wabash Avenue, Chicago 2, Illinois.

LARGE SHOVELS, CRANES, DRAGLINES — 3 YDS. & UP

3500 MANITOWOC ERECTION CRANE

Diesel—120' boom, 30' jib; this machine just like new.

FRANK SWABB EQUIPMENT CO., INC.

313 Hazleton Nat'l Bank Bldg.
Hazleton, Pa. GLadstone 5-3658

Bucyrus Monighan 6160 electric dragline and Bucyrus Erie 50-B electric horizontal thrust coal loader; trail cables included; Price of dragline: $175,000; coal loader: $25,000; f.o.b. mine southeast of Clay City, Indiana. North American Mining Co., Clay City, Indiana.

Bucyrus-Erie 375-B dragline with 150 foot boom and 10 cubic yard bucket; shipped 1930; location Illinois. Address Purchasing Agent, Truax-Traer Coal Company, 111 North Wabash Avenue, Chicago 2, Ill.

Lima 2400 dragline equipped with 110' boom, two 7-yard Hendrix HS buckets, one 6-yard ESCO bucket, Kohler light plant; machine powered with Caterpillar D-392 diesel engine; 63" wide treads; long caterpillar frames; machine shipped September 1950; completely overhauled June 1955; engine completely overhauled April 1955; Approximately $5000 in spare parts available; Price, as is where is, $115,000. Box 3677

SMALL SHOVELS, CRANES, DRAGLINES — UP TO 2½ YDS.

Bucyrus-Erie 54-B 2½ yd. standard shovel front only, complete including deck machinery and bucket; excellent condition; Price $5,000; dealers protected. J. P. MacFarlane, 605 Mellon Bank Bldg., Butler, Pa., Phone 74033.

MISCELLANEOUS EQUIPMENT

Bucyrus-Erie Model 22-B, ¾ yd. shovel, with Caterpillar D-318 Diesel engine. Good condition. Can be seen at Waite yard.

Link Belt Model LS-90, 1 yd. shovel with Waukesha gas engine. Excellent condition, less than three years old. Very good buy. Waite yard.

Gradall—Model 2460, mounted on K-8 International truck chassis. 36" digging bucket. Very good condition; repacked and repainted. Waite yard.

Quickway—Model E Clamshell—Dragline Combination, mounted on Oshkosh 4-wheel drive truck carrier. Both truck and upper assembly overhauled less than 200 hours ago. Priced right. Located in Milwaukee; call for appointment to inspect.

Quickway—Model J back hoe—Shovel Combination. Very good condition. Priced to sell. Waite yard.

Michigan T-6-D rubber mounted shovel. Good condition. Priced right. Waite yard.

Lorain—Model 75, 1 yd. shovel. Old but good—a real rock shovel. Priced right.

H-3 Hydrocrane, mounted on L-162 International truck chassis—equipped with operator's cab, hydraulic tagline reel, clamshell. Very good condition. Waite yard.

H-2 Hydrocrane with clamshell bucket, tagline reel; as is, or rebuilt. Priced right. Waite yard.

Insley—Model 12, ¾ yd. back hoe; good condition; call for appointment to inspect.

Schield Bantam—Model 49 back hoe, mounted on tandem axle truck with 6-wheel drive. Good working condition—a bargain. Waite yard.

TD-6 International dozer-loader combination; very good condition. Priced to sell. Waite yard.

Caterpillar D-6 Bulldozer, Diesel power, narrow gauge; excellent condition; priced to sell quick. Call for appointment to inspect.

Caterpillar D-4 Bulldozer, wide gauge hydraulic blade, new street plates, current series model; perfect condition; priced right. Call for appointment to inspect.

Parson Trench Machine Model 25, equipped with full crawlers, Waukesha engine; perfect water pipe machine; excellent condition; approximately ¼ of today's cost. Call for appointment to inspect.

Paige RC Automatic Dragline Bucket, 1¼ yd. capacity; very good condition; priced for quick sale.

J. P. WAITE CONSTRUCTION CO.
3308 West Pierce St. Milwaukee 15, Wis.
Phone EVergreen 4-1900.

New 18" dredging pump, rectangular cross section casing, high alloy steel liners, high alloy cast steel 4 vane runner; spare liners. Box 3587

LARGE DRAGLINE BARGAIN

625 Page Two Engine Walker, 160' boom; 9½ yd. all manganese bucket; three years old; right price; we originally sold this machine, are well acquainted with it, and know it is in excellent condition.

Pennsylvania location.

Write—Wire or Phone—

FRANK SWABB EQUIPMENT CO., INC.
313 Hazleton Nat'l. Bank Bldg.
Hazleton, Pa. GLadstone 5-3658

MISCELLANEOUS EQUIPMENT

FOR SALE
at fraction of new cost.

Portable steel matting . . . Interlocking . . . Easy to handle . . . Low in cost . . . Ideal for heavy equipment used in excavating, logging, and quarries. Perfect for roadways and storage areas on sand, dirt, or mud. Sold in any quantity.

ALTER COMPANY
Davenport 1, Iowa

Locomotives, diesels, gas, 8 to 100 tons.
Bucyrus-Erie 120-B, 100-B, 150-B, 54-B shovels.
Stiffleg derricks, 15, 35 and 75 tons.
Placer dredges, 4½', 6', 12', 16'.
Cranes, draglines, 1½ to 18 yds.
P&H 2½ to 6-yd. shovels; Marion 151M.
Diesel-elec. generators, 500 to 3500 KW.
Johnson concrete batching, mixing plant.
Rotary kilns, dryers, 7x110, 6x74, 5x40.
Monighan Walker dragls., 9, 7, 5, 4, 200-W.
Colby elec. hammerhead crane, 14-ton.

H. Y. SMITH COMPANY
828 N. Broadway **Milwaukee 2, Wis.**

Used 10-B attachments from 10-B #14755.
Like new backhoe attachment—$750.
Standard 28' dragline boom—$100.
Dragline Fairlead—$100.
¾ Yard dragline bucket—$100.
Shovel front, fair condition—$150.

McCANDLESS CONSTR. CO.
1750 Kearney Street **Springfield, Missouri**

3—10" McCully gyratory crushers.
3—Traylor No. 412 type TZ gyratory crushers.
2—Traylor 8" gyratory crushers.
1—New RCA metal detector, 10"x36" aperture.
6—Used single deck Robins gyrex screens with bases.
5—Used single deck Robins vibrex screens.
1—Used Cameron pump, size 10", 2400 GPM, 125" head, 1150 RPM left hand, serial no. 57537.
1—Used Cameron pump, size 10", 2400 GPM, 125" head, 1150 RPM right hand, serial no. 57535.
1—New Edison voice writer (dictaphone).
In addition we have a substation 2300/440 volt with three 150 KVA transformers.

NEW YORK TRAP ROCK CORPORATION
230 Park Ave. **New York 17, N.Y.**

LaPlant Choate scoop—model C-71, serial no. 104; Parmanco vertical auger drill, serial no. 155; Farmall H gas tractor and Bradley 917 plow, serial no. FBH36626.
The above items can be seen at White Hall, Illinois.
One Fairmont railroad inspection car—M 19, series F 196092; one truck scales, Winslow type P-15 ton, serial no. 1248-13R, 18' x 9' platform.
Any of the above items will be sold individually or at a special package price for the entire group. Contact Purchasing Dept.,

LACLEDE-CHRISTY COMPANY DIVISION
H. K. PORTER COMPANY, INC.
2900 Hampton Avenue, St. Louis 10, Mo.

POSITIONS WANTED

Operator—on gas, diesel, steam or electric powered shovels, back hoes, cranes, bulldozers, trench machines; A-1 mechanic; will go anywhere; now in Baltimore, Md. Box 3685

Superintendent available; 30 yrs. experience and qualifications covering all types of sewers, water lines, highways, airports, heavy and light excavating, earth fill dams; know cost, plans and specifications, materials, labor and modern equipment; honest, sober and reliable; best of health and a pusher; available for any part of the U.S.A. Box 3684

HELP WANTED

EXPERIENCED EXCAVATOR SERVICEMAN FOR TRAVEL IN LATIN AMERICAN COUNTRIES

PROMINENT EXCAVATOR MANUFACTURER HAS OPENING FOR CAPABLE MAN EXPERIENCED IN SHOVEL AND DRAGLINE OPERATION AND MAINTENANCE. MUST SPEAK SPANISH FLUENTLY. MUST BE AN AMERICAN CITIZEN AND WILLING TO TRAVEL. SEND COMPLETE INFORMATION ON BACKGROUND AND REFERENCES WITH RECENT PHOTOGRAPH TO EXCAVATING ENGINEER. BOX 3681

SALES ENGINEERS

Explosives manufacturer with nationwide distribution has attractive openings for men with technical background or practical experience as sales engineers; age, under 30 preferred. Starting salary commensurate with experience. Considerable traveling is required. Liberal benefits. Every incentive for advancement.

This is an excellent opportunity for the application of your knowledge of mining, quarrying, construction, and related industries.

Send complete resume. Photograph optional. All correspondence will be held in strict confidence, and references will not be contacted without permission of applicant.

Box 3680

SUPERINTENDENT POSITION

Contracting company in midwestern states has opening for capable man, experienced with medium to large highway grading and bridge construction and earthen dam projects; opportunity to work into corporation. Box 3686

If you are Buying or Selling Used Equipment, this is the place to let the Excavating Industry know about it.

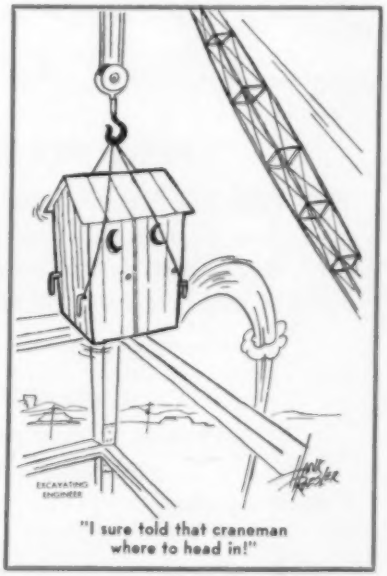
Notes . . .

Continued from page 78

large machines in the western part of the state. George L. Moritz, Emmaus, Pa., will head the eastern sales district. He will be responsible for sale of all Marion products in Delaware, southern New Jersey and eastern Pennsylvania. Two new distributors also were appointed. Knight Equipment Co., 1760 Kelly Rd., Richmond, Va., will handle Marion crawler and rubber-mounted excavators in central and western Virginia. Machinery & Supplies Co., Inc., 2000 Walnut St., Kansas City, Mo., will handle the line in the state of Kansas and the western third of the state of Missouri.

Robertshaw-Fulton Controls Co., Fulton Sylphon Div., Knoxville, Tenn., has appointed David D. Gordon sales manager for its Los Angeles sales district. His territory covers California, Washington and Oregon. The division's major product lines include water mixers, pressure and temperature regulators and automotive thermostats.

Wellman Engineering Co., Cleveland, Ohio, has given Robert C. McDowell, chairman of the board, the additional duties of president. McDowell has been board chairman since 1954. He is also president of the McDowell Co., Inc., industrial engineers and contractors. The Wellman firm manufacturers bulk materials handling and heavy hoisting equipment.



"I sure told that craneman where to head in!"

(PLEASE GIVE THIS ADVERTISEMENT TO YOUR BLASTING FOREMAN)

Laying the "groundwork" for profitable blasting

He's laying the main (trunk) line of Primacord to connect all holes in a hook-up which will permit relief of burden — develop better fragmentation with less secondary blasting. Holes have been loaded and tamped. A "down" line of Primacord extends from top to bottom of each hole, in contact with all explosives in the load, detonating directly or initiating a primer — depending upon the type of explosive used.

When the trunk line has been laid, he'll cut it from the spool — then connect each "down" line at right angles to the trunk line with the simple half-hitch which has been found most effective for the type of Primacord used in the holes.

When all is ready for the blast, he'll prepare his fuse and cap (or use an electric blasting cap) and tape this cap onto the firing end of his Primacord hook-up.

Primacord is an insensitive detonating fuse. It cannot be set off by fire, friction or ordinary shock, but must be detonated. It is not affected by stray currents, and even a direct hit by lightning failed to detonate it.

For more information see your Explosives Supplier, or write to

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Primacord • Quarrycord • Ignitacord® • Safety Fuse Blasting Accessories • Established 1836

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The Proved and Approved DETONATING FUSE

P-1

HOW THE CAT* No. 12 MOTOR GRADER HELPED CUT COSTS

on the Garden State Parkway

Last year New Jersey's fine four-lane Garden State Parkway went in from Cape May to Paramus. Along one section of this big job the haul roads ran a mile and a half from borrow pit to fill—and the fill was 100% sand. It took continuous grading to keep the fill compacted, and Public Constructors, Inc., of Pleasantville, N. J., relied on four Cat No. 12 Motor Graders to do the job, as well as to keep the haul roads in shape.

"What would a contractor do without Caterpillar when there's an earthmoving job to be done?" wonders Supt. John W. Franks. Mr. Franks likes lots of things about the No. 12—mostly its low-cost features. And the *new improved* No. 12 offers greater low-cost advantages than ever.

Costs less to maintain. There's extra life built into every part of the Cat No. 12. The new exclusive Caterpillar Oil Clutch, for example, practically eliminates disc replacement and reduces down time considerably.

Costs less to operate. Just one reason among many: the heavy-duty 115 HP engine delivers efficient power on low-cost non-premium fuels.

Produces more. Positive controls; easy, natural steering that maintains "feel of the road"; clear visibility; fast, accurate blade positioning—features like these add up to maximum operator comfort and convenience, higher production on any job.

AND NOW, ANOTHER NEW COST-SAVING FEATURE:
New tubeless tires do away with expensive tube and flap trouble, eliminate costly tube replacement and can cut over-all tire down time *by 80%!*

No wonder Supt. Franks says, "To us, Caterpillar is the old reliable, always out in front with new designs that assure you not only the latest, but the best."

See *your* Caterpillar Dealer for full details on the high-producing, cost-cutting Cat No. 12 Motor Grader. There's nothing else like it available—anywhere.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR*

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99% OF ALL CAT MOTOR GRADERS EVER BUILT ARE STILL AT WORK